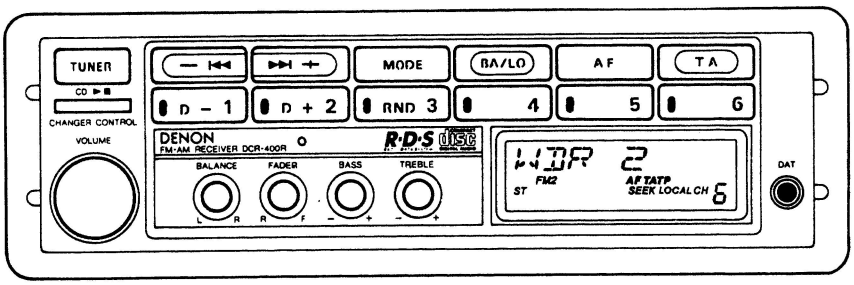
DENON

Hi-Fi Stereo FM-AM Receiver

SERVICE MANUAL

MODEL DCR-400R

STEREO FM-AM RECEIVER



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NIPPON COLUMBIA CO., LTD.

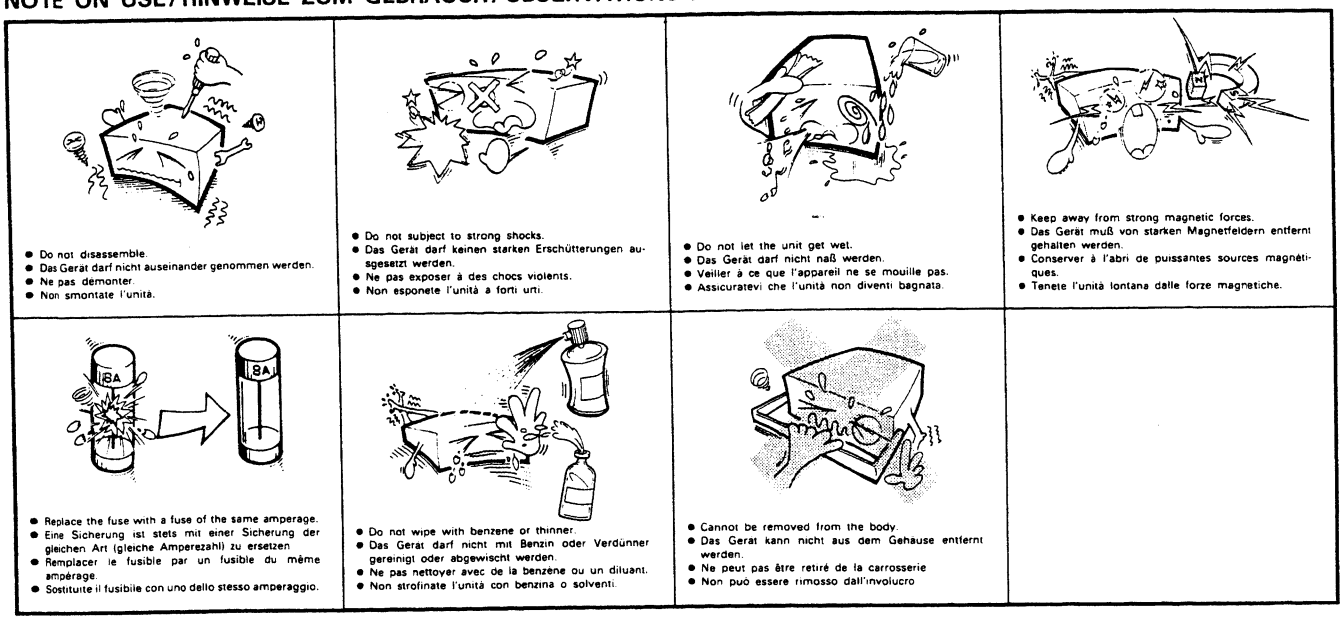
- Please read carefully all safety and operating instructions before installation and use.
  It will help you to obtain the best performances from your new FM-AM Receiver.

- Bitte lesen Sie die Hinweise zur Betriebssicherheit und die Bedienungsanleitung vor der Installation und Anwendung sorgfältig durch.
  Auf diese Weise wird auch wirklich sichergestellt, daß Sie das meiste aus Ihrem neuen UKW-AM-Receiver herausholen.

- Veuillez lire les instructions de sécurité et de fonctionnement attentivement avant l'installation et l'utilisation. Ceci vous permettra de tirer un plaisir musical maximal de votre tuner lecteur de FM-AM.

- Leggete tutte le precauzioni e le istruzioni per l'uso prima di installare e usare l'unità per ottenere le migliori prestazioni dal vostro nuovo ricevitore a FM-AM.

NOTE ON USE/HINWEISE ZUM GEBRAUCH/OBSERVATIONS RELATIVES A L'UTILISATION/NOTE SULL'USO


• Do not disassemble.
• Das Gerät darf nicht auseinander genommen werden.
• Ne pas démonter.
• Non smontate l'unità.
• Do not subject to strong shocks.
• Das Gerät darf keinen starken Erschütterungen ausgesetzt werden.
• Ne pas exposer à des chocs violents.
• Non esponete l'unità a forti urti.
• Do not let the unit get wet.
• Das Gerät darf nicht naß werden.
• Veiller à ce que l'appareil ne se mouille pas.
• Assicuratevi che l'unità non diventi bagnata.
• Keep away from strong magnetic forces.
• Das Gerät muß von starken Magnetfeldern entfernt gehalten werden.
• Conserver à l'abri de puissantes sources magnétiques.
• Tenete l'unità lontana dalle forze magnetiche.
8A
8A
• Replace the fuse with a fuse of the same amperage.
• Eine Sicherung ist stets mit einer Sicherung der gleichen Art (gleiche Amperezahl) zu ersetzen.
• Remplacer le fusible par un fusible du même ampérage.
• Sostituite il fusibile con uno dello stesso amperaggio.
• Do not wipe with benzene or thinner.
• Das Gerät darf nicht mit Benzin oder Verdünner gereinigt oder abgewischt werden.
• Ne pas nettoyer avec de la benzène ou un diluant.
• Non strofinate l'unità con benzina o solventi.
• Cannot be removed from the body.
• Das Gerät kann nicht aus dem Gehäuse entfernt werden.
• Ne peut pas être retiré de la carrosserie
• Non può essere rimosso dall'involucro

- **Reset Function**
  Press the reset switch using the tip of a ball-point pen, etc. when using for the first time or after replacing the batteries or when the LCD display malfunctions due to external interference. "WAIT" is displayed on the LCD during resetting. Wait until "WAIT" turns off before operating.

NOTES:

- Everything stored in the memory, including the stations stored at preset channels M1 to M6, is cleared when the reset switch is pressed.
- Do not press the reset switch with a sharp object, such as a metal pin.
- If the problem persists after the reset switch is pressed, contact your Denon dealer or a local Denon service center.

Design and specifications are subject to change for improvement without prior notice.

FEATURES

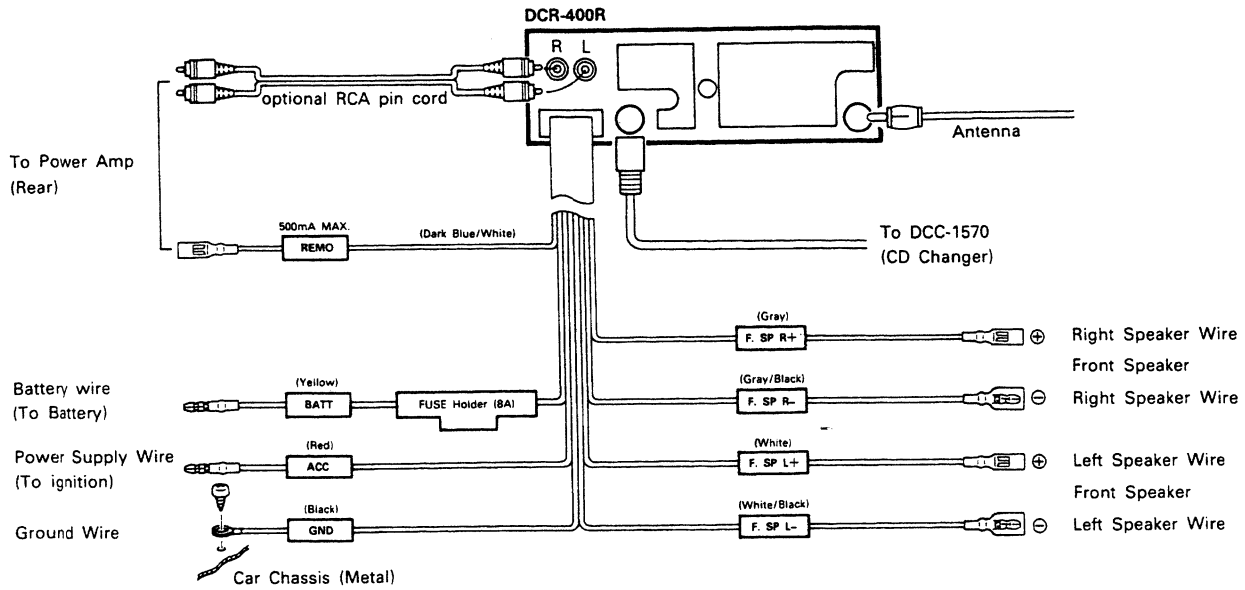
- Power: (Both Channels Driven)
  18W × 2 ch 1 kHz/4 ohms 10% THD
  10W × 2 ch 20 Hz–20 kHz/4 ohms 0.8% THD
- RDS (PI, PS, AF, TA, *PTY) * Only Code 31
- CD changer control
  Random play: all of the tracks on a disc
  Automatic/Manual search
- Quartz/PLL Digital frequency
  Synthesizer tuner.
- DENON Optimum Reception System IV (D.O.R.S.IV).
- 18 Station-presets (12 FM, 6 MW).
- Up/Down manual & seek tuning.
- Local switch.
- DAT input jack
- Exclusive D-Mount system.
  DIN "E" non extractable

FOR YOUR RECORDS

Please record the serial number of your unit in the space provided below and keep it as a permanent record. The serial number is indicated on the top of the unit.
You will need the serial number, if the need for service should arise.

Model DCR-400R
Serial Number _____

CONNECTIONS

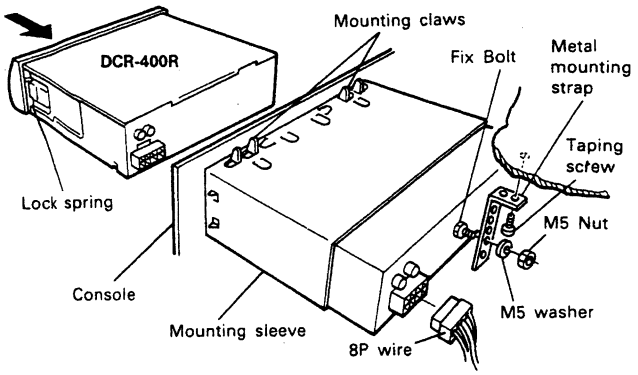


DENON FM-AM Receiver DCR-400R will operate properly with 14.4 V (11 –16 V) car batteries. You cannot use it for 24 V or other types or car batteries.
Maximum rated current capacity of the unit from Remote output is 12 V 500 mA.

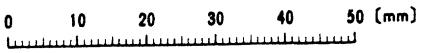
CAUTION! – To prevent damage to the unit.
DO NOT connect the (–) (negative) loudspeaker lead to the ground (chassis) or to any other (–) loudspeaker lead from this unit.

INSTALLATION

- Use screws supplied as accessories when installing the unit.



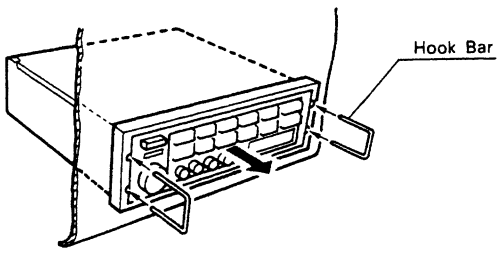
1. Insert the mounting sleeve in the console or dashboard then fasten it to the console with the mounting claws.
2. Insert the unit into the mounting sleeve then check that it is fastened to the mounting sleeve with the lock springs on either side.
3. Fasten the back of the unit to part of the vehicle using the metal mounting strap.



ACCESSORIES

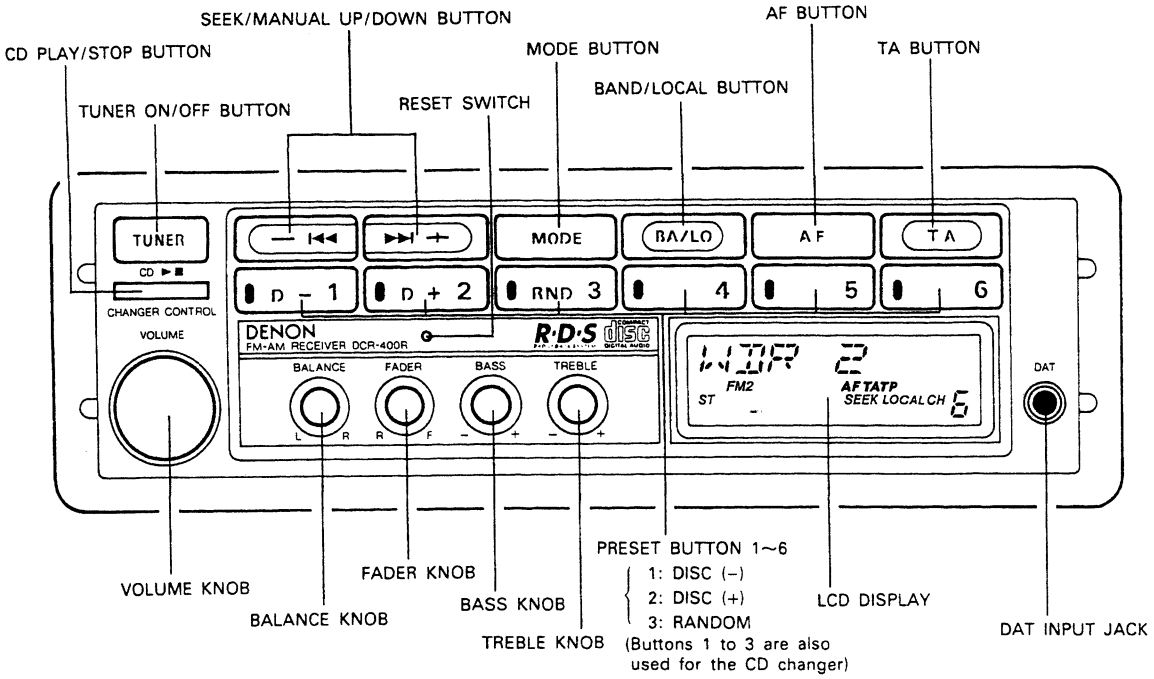
No.	Part name	Q'ty
①	Hook Bar	2
②	M5 Washer	1
③	Tapping Screw 5×20	1
④	M5 Nut	1
⑤	Fix. Bolt	1
⑥	Metal Mount Strap	1
⑦	8P-Wire Ass'y	1

- **To remove the unit**



1. Remove the metal mounting strap fastening the back of the unit from the unit.
2. Insert the Hook Bar into the hole in the panel and pull the unit out.

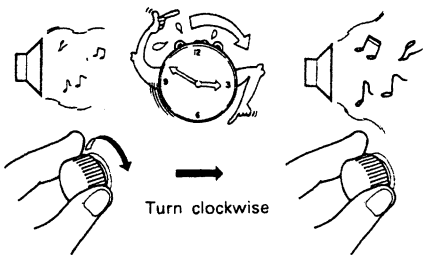
CONTROLS & INDICATORS



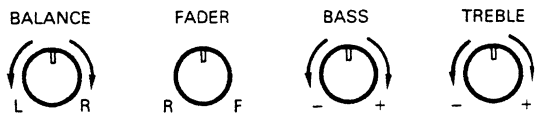
Using the Volume Knob

Volume Adjustment

Turn the knob clockwise to increase the volume.



Balance adjustment and tone adjustment

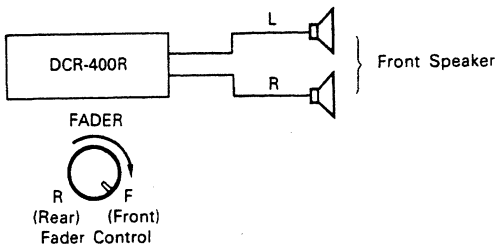


- BALANCE ..... Adjust the right (R) and left (L) balance.
- BASS ..... Adjust the bass to the desired position.
- TREBLE ..... Adjust the treble to the desired position.

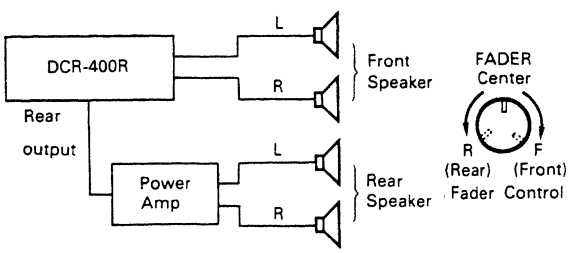
Using the Fader

1. Using the built-in amp

- 2 Speakers

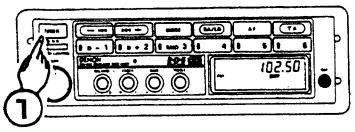


2. Using the built-in amp and rear output



Listening to the Radio

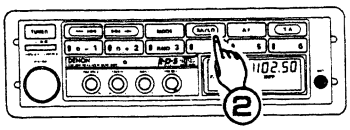
1 Press the [TUNER] button to turn the tuner on.



(TUNER)

- To turn the tuner off, press the [TUNER] button again.

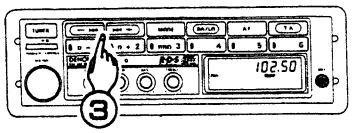
2 Press the [BA/LO] button to select one of the FM, or MW bands.



(BA/LO)

FM1 → FM2 → MW

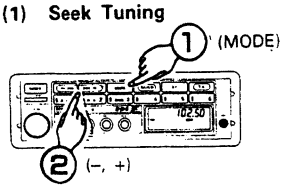
3 Use the [–] [+] buttons to set the desired frequency.
There are two ways to adjust the below.



(–, +)

"ST" appears on the LCD when a stereo broadcast is received.

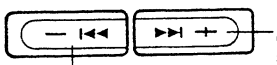
(1) Seek Tuning



(MODE)

(–, +)

1. Press the [MODE] button and check that "SEEK" has appeared on the LCD.
2. Use the [–] [+] buttons to adjust the frequency.

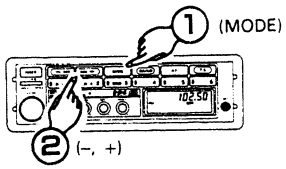


Press this button to move to higher frequencies. Tuning stops automatically when a station is found.

Press this button to move to lower frequencies. Tuning stops automatically when a station is found.

Tuning will not stop at stations whose signals are weak. To tune in such stations, use manual tuning.

(2) Manual Tuning



(MODE)

(–, +)

1. If "SEEK" is displayed on the LCD, press the [MODE] button to turn it off.
2. Use the [–] [+] buttons to adjust the frequency.

The frequency increases in steps of 50 kHz for FM and 9 kHz for MW each time this button is pressed.

The frequency decreases in steps of 50 kHz for FM and 9 kHz for MW each time this button is pressed.

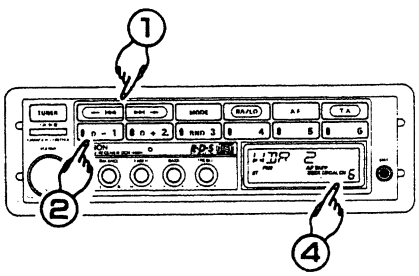
Convenient Functions for the Tuner

Presetting of 12 FM Stations and 6 MW Stations

12 FM stations, 6 MW stations can be preset at buttons 1 to 6 then tuned in directly.

Example: Preset 102.5MHz at preset button 1 for FM1:

1 Tune in FM1 102.5MHz.
2 Press preset button 1 and hold it in for at least two seconds.
3 After about two seconds, a "beep" is heard.
4 "CH1" appears on the LCD. The station is now preset in the memory.

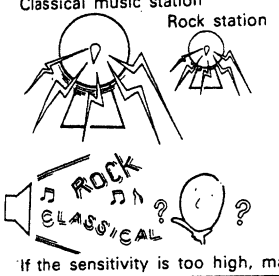


Use this procedure to store other stations. To tune in preset stations directly, simply press the button at which the station was stored.

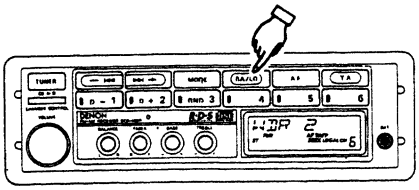
Local Function (DX/LOCAL Selection)

This function is for adjusting the reception sensitivity for the FM and MW bands. When the local mode is set, only stations with strong signals are received.

Classical music station
Rock station

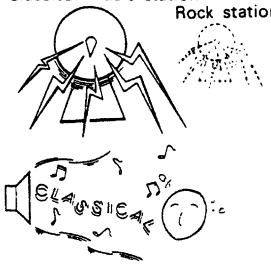


If the sensitivity is too high, many stations are received.



Press the [BA/LO] button for at least 2 seconds.

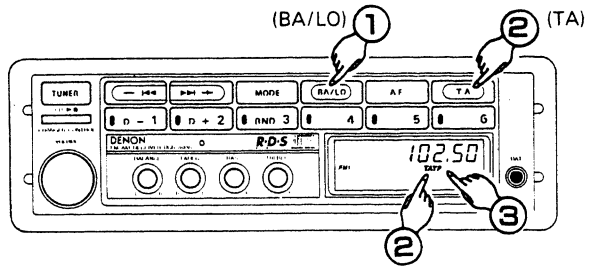
Classical music station
Rock station



Only stations with strong signals are received.

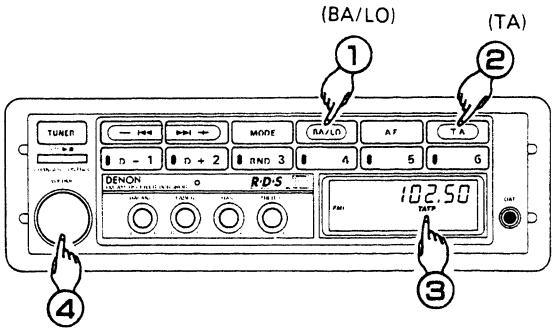
Using the RDS (Radio Data System)

TA (Traffic Announcement) Function



Searching for TP (Traffic Program) broadcast stations automatically

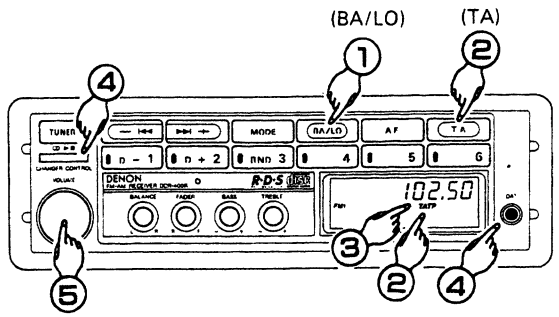
1 Press the [BA/LO] button and select FM1 or FM2.
2 Press the [TA] button. "TA" appears on the LCD.
3 Tuning automatically stops at a station broadcasting traffic information, "TP" is displayed on the LCD and the TP station is received.



Setting the volume to automatically increase when a TA (traffic information announcement) starts while in standby (on FM1 or FM2)

1 Press the [BA/LO] button and select FM1 or FM2.
2 Press the [TA] button. "TA" appears on the LCD.
3 Tuning automatically stops at a station broadcasting traffic information and that station is received. The volume increases when a traffic information announcement starts.
4 To listen only to traffic information announcements, set the main volume knob to the minimum. The volume turns up when a traffic information announcement starts.

TA (Traffic Announcement) Function



Automatically listening to traffic information announcements while playing CD changer or DAT player.

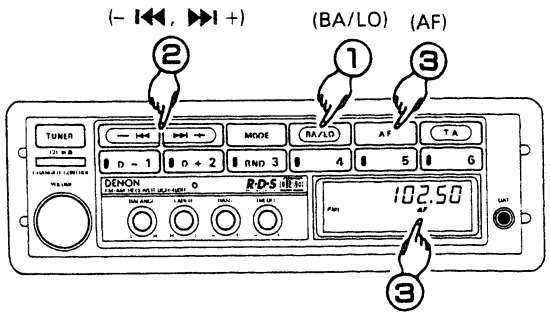
1 Press the [BA/LO] button and select FM1 or FM2.
2 Press the [TA] button. "TA" appears on the LCD.
3 Tuning automatically stops at a station broadcasting traffic information and "TP" appears on the LCD.
4 Press the CD ▶■ button. (Connect the DAT player DAT input jack.)
5 Use the main volume knob to adjust the volume of the CD changer or DAT player.

- When traffic information announcements start, the set automatically switches to the traffic information announcement.
  When this happens:
  The CD player is set to the stop mode.
  The DAT continues playing the tape, but no sound is heard.

<Notes on Using the TA Function>

1) If the signals for the station being received become weak for over 10 seconds, another station broadcasting the same TP (Traffic Program) is tuned in. However, if there is no other station broadcasting the same program or if its signals are weak, a station broadcasting a different TP is tuned in.
2) A beep tone is sounded if there is no station broadcasting a [TA] (Traffic Program) or if its signals are weak. If this happens, press the [TA] button again so that "TA" disappears from the LCD, then wait until entering an area in which a station broadcasting TPs can be received and press the [TA] button again.
3) "TA" flashes on the LCD if the signals of the station being received become weak and the data cannot be identified.
4) When the TA button is on and traffic information is broadcast, the volume automatically increases to a certain level. The level can be adjusted.
   Adjustment
   1. Remove the tuner from the sleeve.
   2. The adjustment screw is on the Rear of the DCR-400R.
   3. Using a screwdriver, turn the screw clockwise to increase the volume, counterclockwise to decrease it.
5) Some stations broadcast TA (traffic announcement) signals even when they are not broadcasting traffic information announcements. In such cases, the TA function will not work properly.

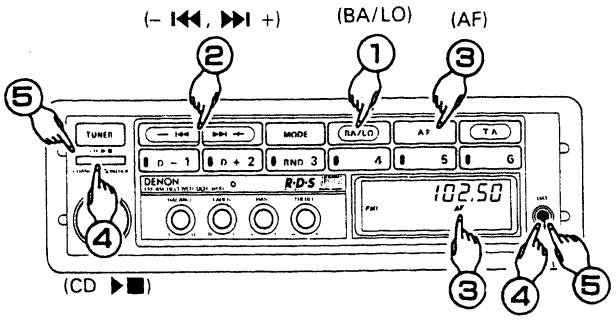
AF (Alternative Frequency) Function



To constantly receive stations broadcasting the same program

1 Press the [BA/LO] button and select FM1 or FM2.
2 Use the [– ⏮, ⏭ +] buttons to tune in the desired RDS station.
3 Press the [AF] button. "AF" appears on the LCD.

- When the signals of the station being received become weak, "AF" flashes on the LCD, and another station broadcasting the same program is searched for based on the AF list.
- The frequency changes when another station broadcasting the same program is found.



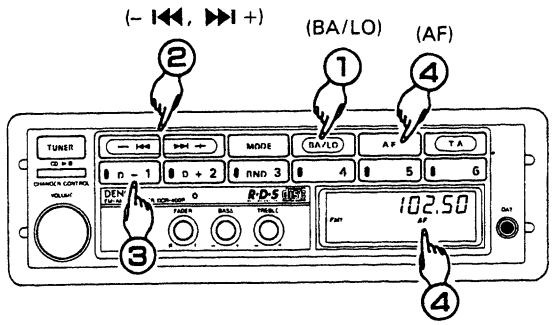
Automatically tracking stations broadcasting the same program while playing a CD changer or DAT player so that reception is always good when switching to the tuner

1 Press the [BA/LO] button and select FM1 or FM2.
2 Use the [– ⏮, ⏭ +] buttons to tune in the desired RDS station.
3 Press the [AF] button. "AF" appears on the LCD.
4 Press the CD ▶■ button. (Connect the DAT player DAT input jack.)

- When the signals of the station being received become weak, "AF" flashes on the LCD, and another station broadcasting the same program is searched for based on the AF list.
- The frequency changes when another station broadcasting the same program is found.

5 When the set is put back to the radio mode after pressing the CD ▶■ button or [TUNER] button (disconnect the DAT input jack), the station that was being received before the CD (or DAT) was played is tuned in again.

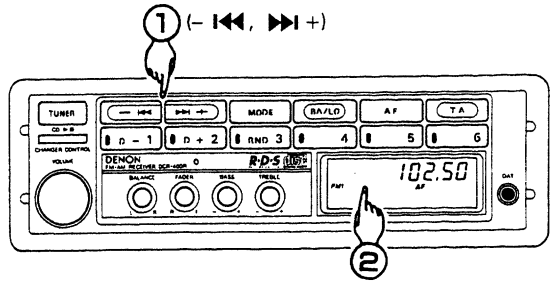
AF (Alternative Frequency) Function/PI (Program Identification) Function



Storing the AF lists and PI codes in the preset memory

1 Press the [BA/LO] button and select FM1 or FM2.
2 Use the [– ⏮, ⏭ +] buttons to tune in the desired RDS station.
3 Press the preset memory button (M1 to M6) at which you want to store that station and hold it in for at least 2 seconds.
4 Press the [AF] button. "AF" appears on the LCD.
5 When a preset button at which the AF list or PI codes was stored is pressed, the AF or PI search operation is performed automatically. The stored broadcast stations and broadcast stations carrying the same content are searched for based on the AF list. When pertinent broadcast stations are not on the AF list, a search is made for broadcast stations having the same PI code.

- The PI codes can be preset for both the FM1 and FM2 bands.



If no new broadcast station with strong signals is found when the [AF] button is pressed

1 Use the [– ⏮, ⏭ +] buttons for tuning.
2 Tune in an RDS station.

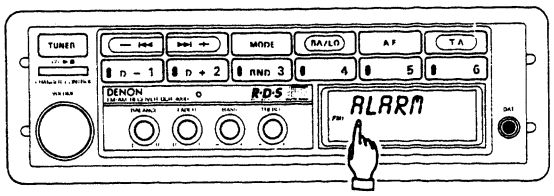
- If the signals for all of the stations at the frequencies on the AF list are weak, tune in a different station.

AF (Alternative Frequency) Function

<Notes on Using the AF Function>

1) With the AF function, the AF button is pressed and stations broadcasting the same program as the station currently being received are searched for based on the AF list. The AF list includes stations broadcasting the same program. If no receivable station is found when the list is checked through 10 times, stations are searched for using the PI codes (codes for stations broadcasting the same program) and a beep tone is sounded. This operation is then repeated. Thus, in areas far from the broadcasting stations, the alternative frequency function may not work.
2) When presetting, both the PI codes and AF list are stored along with the station's frequency for buttons M1 to M6 on the FM1 band, and only the PI codes are stored along with the station's frequency for buttons M1 to M6 on the FM2 band.
3) The sound may be interrupted once ever 10 seconds after the [AF] button is pressed while the station with the best reception is being searched for based on the AF list. This is not a malfunction.
4) "TA" flashes on the LCD if the signals of the station being received become weak and the data cannot be identified.
5) The AF function may not work properly for RDS stations which do not transmit AF lists.

PTY (Program Type) Function

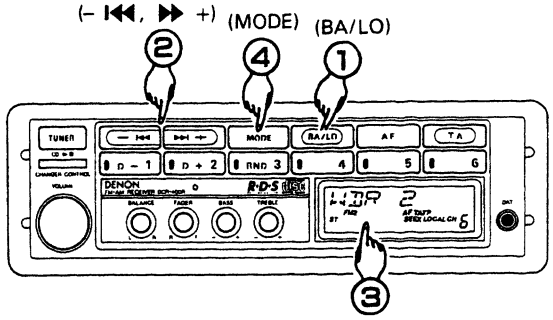


"PTY" (code 31)

If the station being received on the FM1 or FM2 band transmits a PTY code 31, "ALARM" appears on the LCD and a beep tone is sounded. Also, the volume turns up even if the main volume knob is set at the minimum, indicating an emergency. Follow the instructions being broadcast.

- This function will only work when receiving RDS stations (stations with program service names). In addition, it may not work properly if the signals of the station being received are weak.
- There are no buttons for the PTY (code 31) operation.

PS (Program Service Name) Function



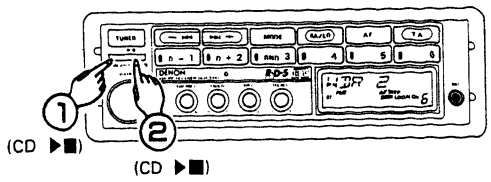
Displaying the PS (Program Service Name) on the LCD

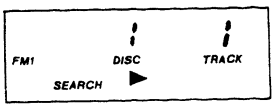
1 Press the [BA/LO] button and select FM1 or FM2.
2 Use the [⏮] [⏭] buttons to tune in the desired station.
3 After the frequency of the station being received appears on the LCD, the display switches to the PS (Program Service Name).
4 To check the frequency of the station being received, press the [MODE] button and hold it in for two seconds. The display changes to the frequency. Three seconds later, the PS (Program Service Name) reappears.

<Notes on Using the PS Function>

1) The PS (Program Service Name) is not displayed if the station being received is not an RDS station or if its signals are weak.
2) The PS (Program Service Name) is only displayed for the FM1 and FM2 bands, not for the MW band.
3) The PS (Program Service Name) is always displayed for the FM1 and FM2 bands.
4) The PS (Program Service Name) may not be displayed correctly as transmitted from the station.

Listening to Compact Discs (Please connect the optional DCC-1570)



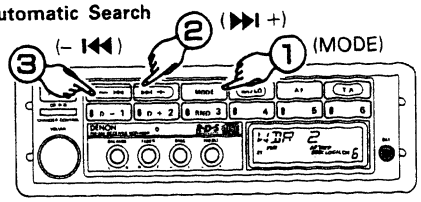


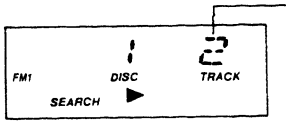
1. Pushing the CD ▶■ button will start the CD play.
   The "▶" sign and the currently playing disc number and track number will be displayed on the LCD.
2. Pushing the CD ▶■ button once again will stop the CD play.

- During DAT playback, the mode does not automatically button to the CD changer when this button is pushed.

Searching for the Desired Track

(1) Automatic Search





1 Pushing the [MODE] button will display "SEARCH" on the LCD and set the unit to the automatic search mode.
2 Pushing the [▶▶I +] button will find the beginning of the next song and resume play.
3 Pushing the [I◀◀ –] button will return to the beginning of the song in play, and resume play.
4 Continuing to push the [▶▶I +] (or [I◀◀ –] button) will find the beginning of the next song (or the previous song) and resume play.

- The track numbers of the songs being searched will be displayed on the LCD.

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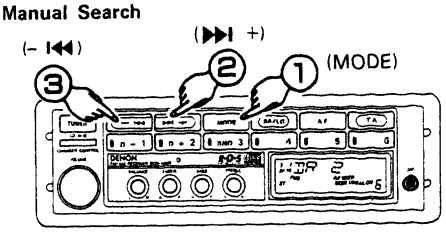
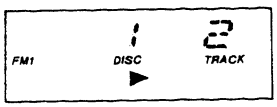
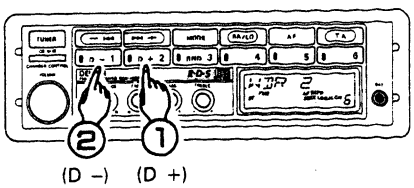
(2) Manual Search

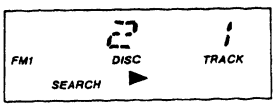




1 Pushing the [MODE] button will set the manual search mode and the "SEARCH" display on the LCD will go out.
2 Continuing to push the [▶▶I +] (up) button will fast forward the disc.
3 Continuing to push the [I◀◀ –] (down) button will fast reverse the disc.
At this time the sound can be heard at a lower volume than during regular playback.

Disc Change





1 Pushing the [D +] button will advance the unit to the next disc and start the play from the first track.
2 Pushing the [D –] button will return the unit to the previous disc and start the play from the first track. The number of the changed disc is displayed on the LCD.

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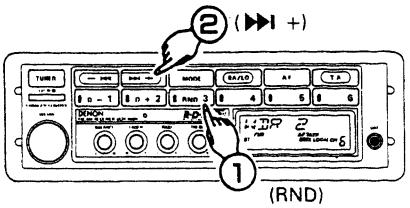
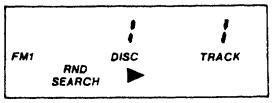
Random play (For one Disc)

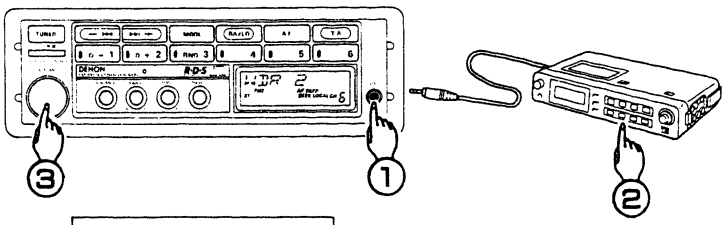
Use this to play the tracks in random order.

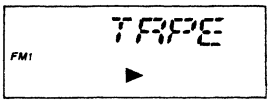




1 Pushing the [RND 3] button will play back each of the tracks on the disc currently being played in random order once. "RND" will be displayed on the LCD.
2 To move to the next track (selected in random order) when in the middle of a track, check that "SEARCH" is displayed on the LCD, then press the [▶▶I] button.
- When the [0 • 2] button is pushed one more time, the unit will return to the regular playback mode and the LCD display will go out.

Listening to DATs





1 Connect DAT player to the DCR-400R's DAT input jack.
2 Press the play button of the DAT player.
3 Adjust the volume knob of the DCR-400R to the desired level.
- When not using the DAT player, disconnect its plugs from the input jacks.
- Use the mini plug for connection of the DAT player. Do not forcibly connect if there is an irregularity with the mini plug connection.

- **Error Displays**
With the DCC-1570 connected, if any of the following error displays are shown on the LCD when the unit is operated, carry out the measure indicated in the table.

Error display	Cause of error	Measure
NO MAG.	The disc magazine is not inserted in the changer.	Insert a disc magazine that has been loaded with discs into the changer.
NO DISC	Discs are not loaded in the disc magazine.	Remove the disc magazine and load the discs.
ERROR	The DCC-1570 does not operate for some reason.	Push the DCR-400R reset switch.
HOT	The temperature protection circuit of the DCC-1570 has operated.	Wait until the temperature drops.

SPECIFICATIONS

FM TUNER

- **Mono Usable Sensitivity** 14.8 dBf 1.5 µV (75 ohms)
- **50 dB Quieting Sensitivity** 20.3 dBf 2.8 µV (75 ohms)
- **Alternate Channel Selectivity** 100 dB
- **S/N (Signal to Noise Ratio)** 70 dB
- **Stereo Separation** 40 dB at 1 kHz
- **Capture Ratio** 2.5 dB
- **Image Rejection** 70 dB
- **IF Rejection** 120 dB

AM TUNER

- **Sensitivity** 30 µV (S/N 20 dB)

GENERAL

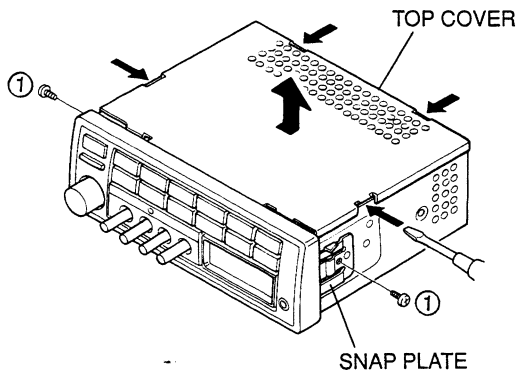
- **Power Output** *1 18 W × 2 ch at 1 kHz with 10% THD
*2 10 W × 2 ch from 20 Hz to 20 kHz with 0.8% THD
- **Output Voltage – Pre-amp level** 1 V/10 k ohms
- **Bass** ±12 dB at 40 Hz
- **Treble** ±12 dB at 15 kHz
- **Remote Output** 12 V 500 mA max.
- **Chassis Size (W × H × D)** 178 mm × 50 mm × 146 mm (7-1/64" × 1-31/32" × 5-3/4")
- **Panel Size (W × H × D)** 187 mm × 59 mm × 19 mm (7-23/64" × 2-21/64" × 3/4")
- **Weight** 0.8 kg (1 lbs 13 oz)

*1 Power Output is per channel minimum continuous average power into 4 ohms, both channels driven, at 1 kHz, with no more than 10% total harmonic distortion.
*2 Power Output is per channel minimum continuous average power into 4 ohms, both channels driven from 20 Hz to 20 kHz, with no more than 0.8% total harmonic distortion.

REMOVAL OF EACH SECTION

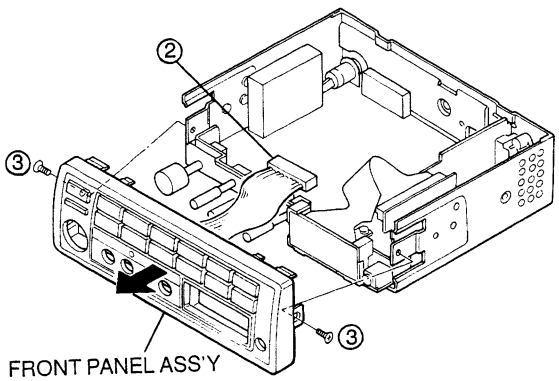
● Top Cover

1) Remove hooks with (–) screwdriver.
2) Remove Top Cover in arrow direction.



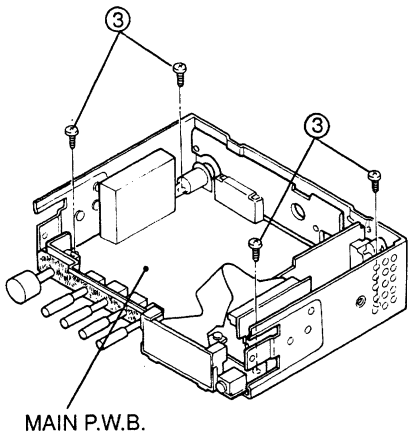
● Front Panel Ass'y

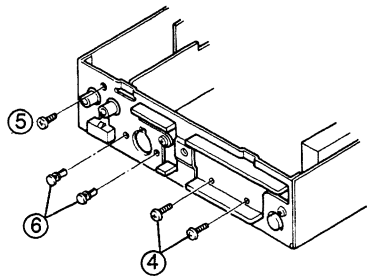
1) Remove 2 screws ①. Then Snap plate can be detached off.
2) Remove connector ② attached to Front Panel Ass'y.
3) Remove screws ③. Then Front Panel Ass'y can be detached.



● MAIN P.W.B. Ass'y

1) Remove 4 screws ③.
2) Remove rear screws ④, ⑤ and push rivet ⑥. Then Main P.W.B. is now detachable.





CIRCUIT DISCRIPTION

RDS (Radio Data System)

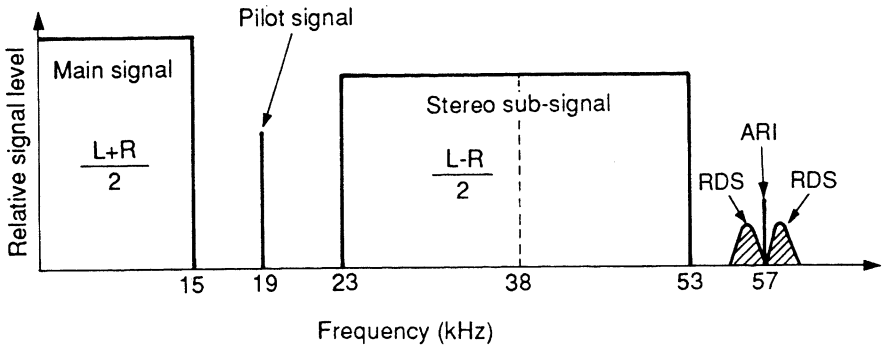
- Car radio is mainly operated by the driver, each time when the car travels out of the service area of a broadcasting station, the driver will have to tune to another station, and an automatic selective tuning is considered as one of a main features of the radio. European broadcasting Union (EBU) has standardized Radio Data System (RDS) to facilitate automatic tuning to the optimum FM broadcasting station. RDS transmits multidata to facilitate automatic tuning to an optimum station which is broadcasting the same program: Identification of traffic information, and display of the station code.

- Main specifications of RDS

Data rate	1,187.5 bps
Signal format	(26,16) modified shortened cyclic code
Baseband signal format	Differential phase shift keying (DPSK)
Subcarrier frequency	57 kHz
Subcarrier frequency modulation	Double Side Band Suppressed Carrier Amplitude Modulation
Maincarrier frequency deviation	±2 kHz

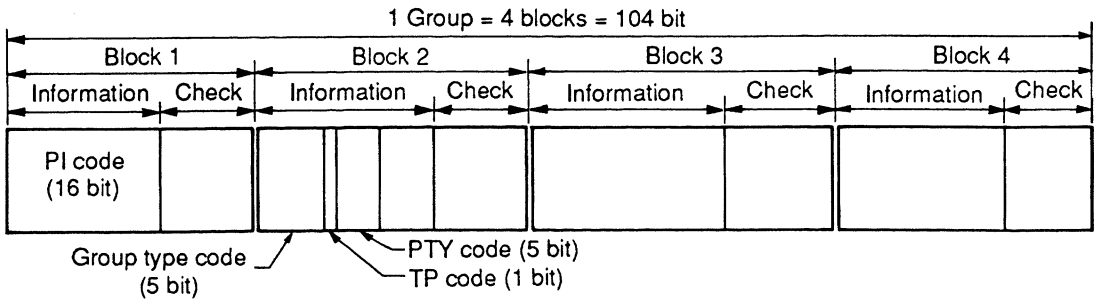
- Data channel

  Data channel employs 57 kHz band to minimize interference to programme band. RDS signal is a signal with bit rate of 1,187.5 bps. modulated by differential phase shift keying (DPSK). This signal comprises the composite signal and an additional signal with subcarries of 57kHz modulated in amplitude by double side band suppressed carriers.



- Data Format

  All data are transmitted in a group unit which comprises 104 bit. The 104 bit unit comprises 4 groups, which format 26 bit group respectively. Each group comprises 16 bit information words and 10 bit check words. Data in each group are specified depending on the situation: The first 16 bit of the first group is always the program identification (PI) code, the first 5bit of the second group is a group-type to clarify the group application, the next 1 bit is Traffic program Identification (TP) code, and the following 5 bit is Program Type (PTY) code. Each contents of data is specified for remainder of the second block, the third and fourth block data respectively.

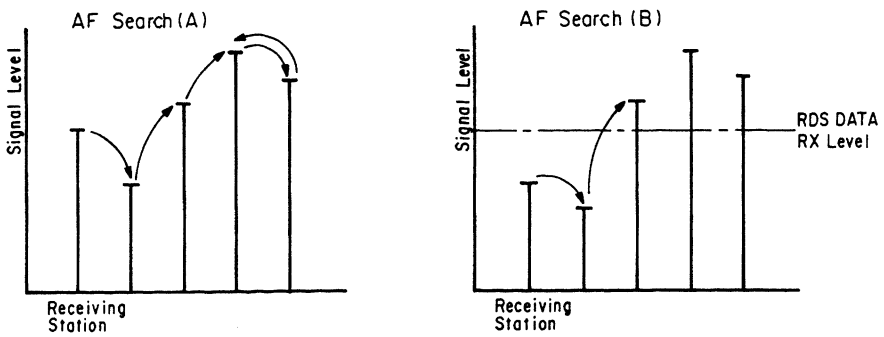


PI: Program Identification Code (Country identification, Area coverage, Programme reference number)
TP: Traffic Program identification Code.
PTY: Program Type Code (News, Light music, Education, Sports, etc.)

RDS Control

1. Signal Flow (Refer to Block Diagram)
   Picks up RDS signal from the output of FM IF IC (IC401/LA1862M). Inputs this signal to RDS decoder IC301 (μPC1346GS) for decoding, further, inputs this signal to synchro correction IC IC302 (LC7070NM) to demodulate RDS data, thus RDS data will be demodulated.
   RDS data as in form of serial data consists RDS START, RDS CLK, and RDS DATA is emitted from IC302 and applied to system control microcomputer IC901 (μPD75516G). This IC901 performs DCR-400R related all controls of LCD indication, control of CD changer, etc. besides control of RDS.
2. PS Function: Program Service Name
   A function to indicate a name of broadcast station being received on the LCD by PS code in BLOCK 4. Also, functions to indicate on the LCD when PS code is received through the continual check of PS code without relying on "AF" key or "TA" key if it is FM BAND.
3. AF Function: Alternative Frequencies (frequency list of stations broadcasting the same program)
   An automatic searching function, i.e. when reception condition of RDS station being received becomes poor for some reason, or in case a station being received comes into out of service area and makes no reception as receiving is carried out on the moving vehicle, shifts to a station broadcasting the same program. The automatic searching function only performs at the time "AF" key ON or "TA" key ON state, on the other hand PI code or AF code is continually checked in FM BAND.
4. TA Function: Traffic Announcement
   A function at the time TA code of 12th bit in BLOCK 2 becomes ON, it automatically shifts the voice to RADIO and listen to traffic announcement even if the voice of cassette or CD changer is in output state. At the same time, sound volume will also be boosted however the volume is set at minimum that can be feasible to listen to the traffic announcement. Note that TA function is only effective in "TA" key ON state.
5. PTY Function: Program Type (only 31, ALARM code)
   With the PTY code of 7th thru 11th bit in BLOCK 2, discriminating the program contents of broadcast being received is feasible. Remind that this model detects only PTY code = 31(ALARM). When it is detected, it automatically shifts the voice to RADIO, outputs the ALARM tone, and automatically boosts the volume level.
   Also, PTY Function does not depend on the "AF" key or "TA" key to effect if it is FM BAND.
6. Search Function
   1 AF Search
   AF search performs automatic search as mentioned in "Paragraph 3. AF Function", also performs the optimum reception searching (to select best receiving condition station among the same PI code broadcast stations) at the time RADIO ON, shifting from LW, MW to FM BAND, or at (*) preset call, etc.
   The latter one is called AF Search (A) and the former one is called AF Search (B).
   AF search (B) will function when RDS data is unable to receive for 10 seconds (**), or the same PI code is unable to receive for 10 seconds. Also, AF search (B) stops searching when RDS code is enable to receive and at the time searches the same PI code station, then shifts the receiving station. The both AF search (A) and (B) return to the receiving station searching has started when an appropriate station which satisfies the conditions is unable to find in one round search.

   (*) FM 1 BAND only. Preset is feasible to memorize 13 stations maximum.
   (**)When RDS signal is unable to receive for 5 seconds, AF indication will blink in "AF" key ON state, and TA indication will blink in "TA" key ON state.



   2 PI Search
   When performing AF Search (A) and receives no RDS station, performing AF Search (B) consecutively 10 times, and receives no RDS station, or PI code is detected however, AF code can not be read and that the performing of AF search is unable to do, then, PI Search will be performed 15 seconds later. This PI Search is Auto Seek and to search the same PI code station, and to produce a "BEEP" tone at beginning of search and indicates 'P' preceding to the frequency display on LCD. And, when searching FM BAND for one round and can not find the same PI code station, produces a BEEP" tone gain to finish searching.

3. RDS Search

When ⏩ key or ⏪ key is pressed (only in SEEK mode), it becomes AUTO Seek, RDS Search to stop only at RDS station. At this time, preceding to the frequency display on LCD indicates 'R' letter. Also, in "AF" key ON state, when wholly has not received PI code or AF code by the station being received (stores no PI code or AF code in the memory of microcomputer) and RDS data can not be received for 2 seconds causes to produce a "BEEP" tone and automatically performs RDS search.

4 TP Search

When ⏩ key or ⏪ key is pressed in "T" key ON state (only in SEEK mode), become AUTO Seek, TP Search to stop only at a station which TP code is ON in BLOCK 2. At this time, 'T' letter will be displayed preceding to the frequency indication on LCD.

Or, when TP code can not be detected for 15 seconds in "TA" key ON state when turning ON the RADIO or becomes FM mode from MW, LW mode and can not detect TP code for 2 seconds, or at the time a receiving station is not TP station and to turn ON "TA" key, produces a "BEEP" tone and performs TP Search automatically.

Also, when performs TP Search for 5 rounds in BAND and can not search TP station, continually produces "ALARM" tone. This alarm tone continues until finding TP station or when it becomes "TA" key OFF state, it also continues however shifting to cassette or CD mode if "TA" key ON state remains.

7. MODE

DCR-400R has 3 modes: RDS OFF, AF, TA, and the mode will be cyclically shifted with "AF" key and "TA" key.

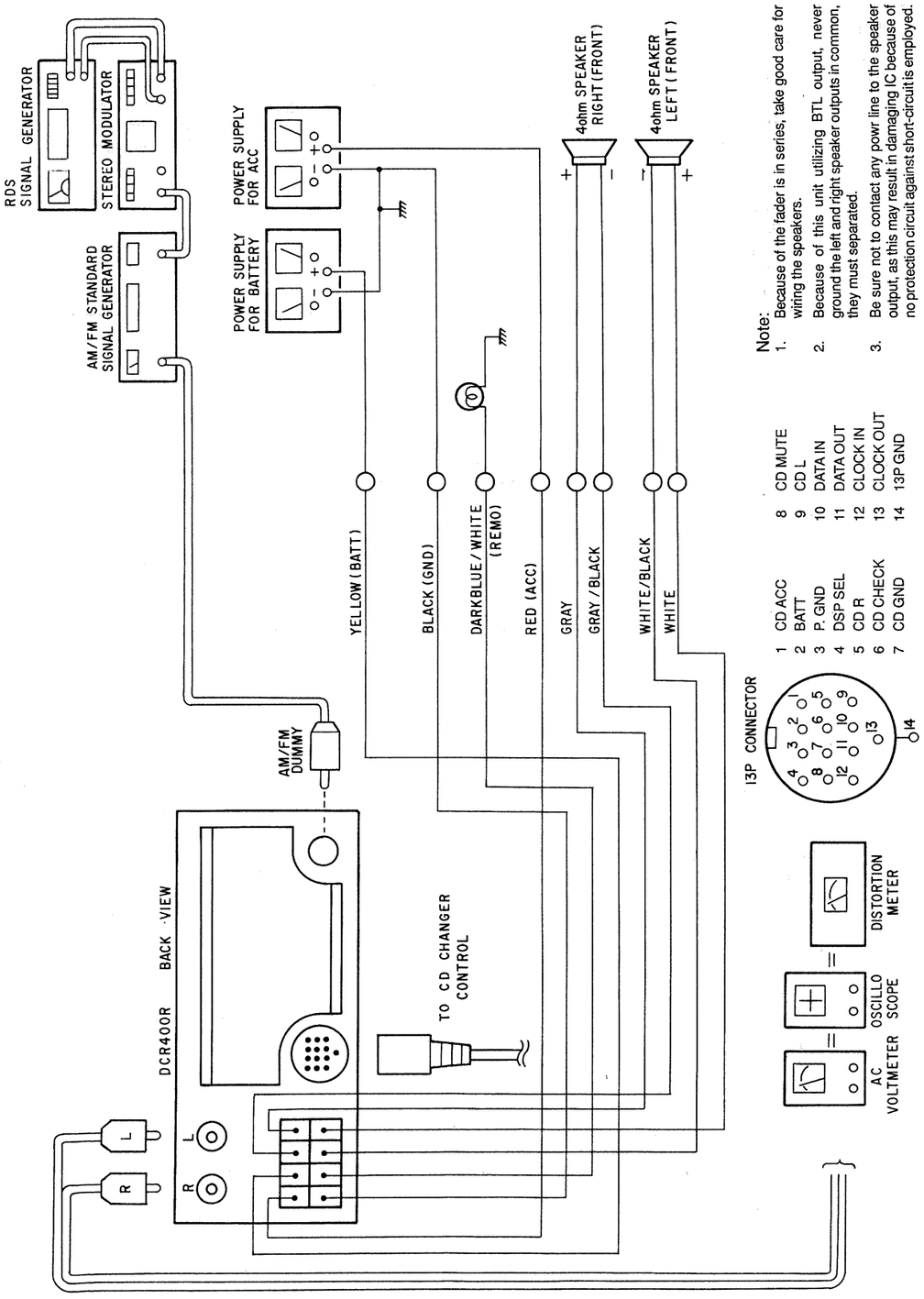
Key In / Present Mode	AF	TA
RDS OFF	AF	TA
AF	RDS OFF	TA
TA	AF	RDS OFF

The following is the effective functions for each mode.

	PS	PTY (ONLY 31)	AF Search	PI Search	RDS Search	TP Search
RDS OFF	O	O	×	×	×	×
AF	O	O	O	O	O	×
TA	O	O	O	×	×	O

SPECIFICATIONS FOR ADJUSTMENT

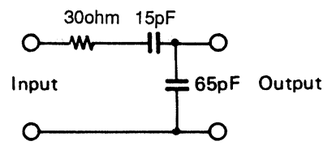
● WIRING DIAGRAM



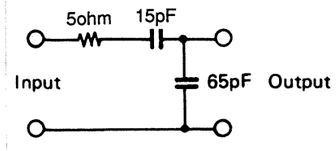
Note:
1. Because of the fader is in series, take good care for wiring the speakers.
2. Because of this unit utilizing BTL output, never ground the left and right speaker outputs in common, they must separated.
3. Be sure not to contact any powr line to the speaker output, as this may result in damaging IC because of no protection circuit against short-circuit is employed.

1. Conditions for adjustment (adjustment must be done in the following conditions)
   1-1 Supply voltage — 14.4V DC
   1-2 Temperature — Normal temperature
   1-3 Dummy antenna — Use standard dummy antenna

AM standard dummy



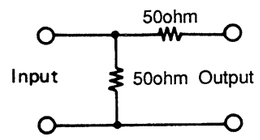
For 50ohm signal generator



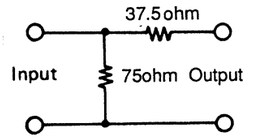
For 75ohm signal generator

Note: Input level should be read at the SG output.

FM standard dummy



For 50ohm signal generator



For 75ohm signal generator

Note: Input level should be read at the unit input (antenna input).

2. Setting of controls before adjustment (controls and switches must be set as follows)
   2-1 Controls
   - Balance, bass and treble control — set at mechanical center position.
   - Volume at approximate maximum position.
   - Fader balance at center.

   2-2 Switches
   - AF, LOCAL, and TA, set to OFF position.

ADJUSTMENT

● **FM ALIGNMENT (Confirm that the LOCAL is not indicated.)**

Table 1

Step	Aligning	SG set	Tune in to	Output Connection	Adjusting Method	Remarks
1	Discriminator (FM Det Coil)	98.1 MHz 1 kHz, 75 kHz dev 60 dBμ (Ant input)	98.1 MHz	CN2A 0-center meter	Adjust T401 and obtain 0-center meter indication at 0V.	Indication should be within 0 ± 0.05V.
2	FM IF (Tuner Pack)	98.1 MHz 1 kHz, 75 kHz dev Low level without limiter effect	98.1 MHz	LINE Amp output to AC Voltmeter	(Adjust IFT1 for) maximum output.	Preset by the factory. Adjust only as necessary.
3	Muting	98.1 MHz 1 kHz, 75 kHz dev 60 dBμ (Ant input)	98.1 MHz	LINE Amp output to AC Voltmeter	None	Set the Line output at 0dB. –30dB over noise output by moving the SG frequency from 98.1 to 99.1 MHz.
4	Output level	98.1 MHz 1 kHz, 75 kHz dev 60 dBμ (Ant input)	98.1 MHz	LINE Amp output to AC Voltmeter	None	Set the Volume control at maximum. Confirm that LINE Amp output is within 1.25V ± 0.25V (center 1.25V).
5	Auto-stop level	98.1 MHz 1 kHz 75 kHz dev 17 dBμ (Ant input)	98.1 MHz	None	Adjust VR403 and set to the range.	Select appropriate frequency point and search. Confirm that auto stop functions at 17±5dBμ ANT input.

● **FM MPX ALIGNMENT (Confirm that the MONO is not indicated.)**

Table 2

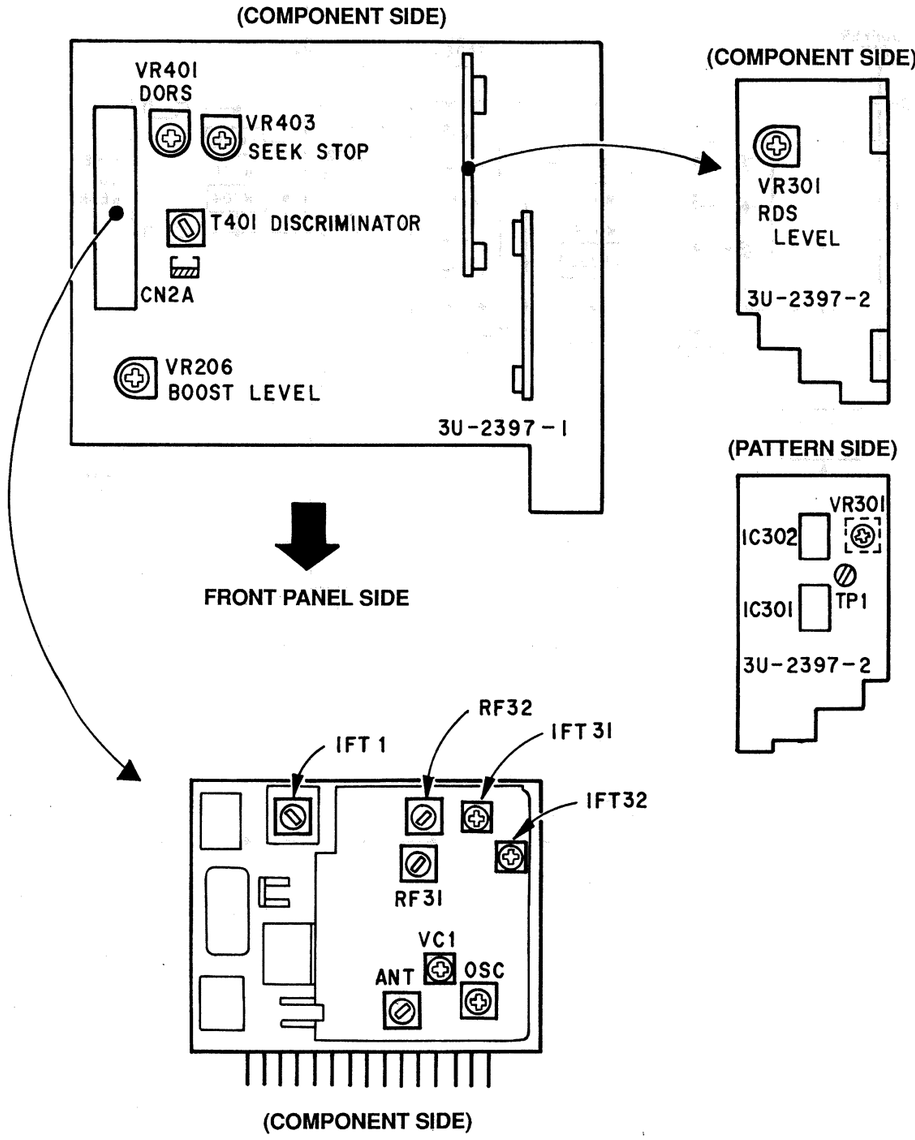
Step	Aligning	SG set	Tune in to	Output Connection	Adjusting Method	Remarks
6	Separation	98.1 MHz 1 kHz, 67.5 kHz dev Pilot 7.5kHz dev 60 dBμ (Ant input)	98.1 MHz	L and R LINE Amp output to AC Voltmeter	(Adjust VR404 and set to the range. S/No. 240 2041~)	L and R separation becomes 25 dB over.
7	D.O.R.S. IV (Auto-blend and Auto high filter)	98.1 MHz 1 kHz, 67.5 kHz dev Pilot 7.5kHz dev 40 dBμ (Ant input)	98.1 MHz	L and R LINE Amp output to AC Voltmeter	Adjust VR401 so that the L and R separation becomes 10±3dB.	As input 60dBμ separation occasionally changes for worse when performing adjustment, repeat adjustments Separation and Autoblend for any number of times.
8	RDS level (57KHz level)	98.1 MHz 1 kHz, 60.0 kHz dev Pilot 7.5kHz dev RDS 1.2KHz dev 60dBμ (Ant input)	98.1 MHz	TP-I to AC Voltmeter	Adjust VR301 for maximum output	PS indication should be within 22±5dBμ.
9	Boost Level	98.1 MHz 1 kHz 60.0 kHz dev Pilot 7.5 kHz dev RDS 1.2 kHz dev 60 dBμ (ANT input) TP-ON TA-ON	98.1 MHz	LINE Amp output to AC Voltmeter	Adjust VR206 and set to the range	Set the Volume control at mininum. Confirm that LINE Amp Output is within 50V ±20mV.

● **AM (MW) ALIGNMENT**

Table 3

Step	Aligning	SG set	Tune in to	Output Connection	Adjusting Point	Adjusting Method	Remarks
10	AM IF	999 kHz 400 Hz 30% Level at no AGC effect	999 kHz	L and R Line Amp output to AC Voltmeter	IFT31 IFT32	Preset by the factory. Adjust only as necessary.	
11	Tuning Voltage		531 kHz 1602 kHz		VC1 OSC	Preset by the factory. Adjust only as necessary.	
12	Tracking	603 kHz 400 Hz 30% Low level without limiter effect 1404 kHz 400 Hz 30% Low level without limiter effect		L and R Line Amp output to AC Voltmeter	ANT RF31 RF32	Preset by the factory. Adjust only as necessary.	
13	Auto-stop level	999 kHz 400 Hz 30%	Select appropriate frequency point and search.		None	None	Indication should be within 35 ± 6dBμ.
14	Output level	999 kHz 400 Hz 90% 74 dBμ (Ant input)	999 kHz	L and R Line Amp output to AC Voltmeter	None	None	Set the Volume control at maximum. Confirm that LINE Amp output is within 1.25V ± 0.25V (center 1.25V).

ADJUSTMENT POINT

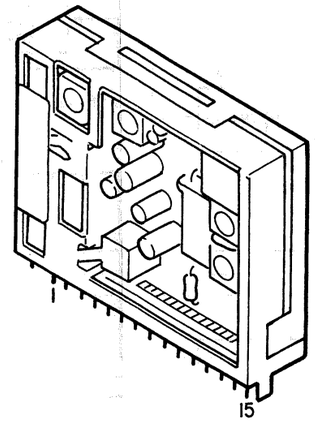


FM/AM TUNER UNIT

Parts marked with * are subject to change depending on lot, due to characteristic warranty.

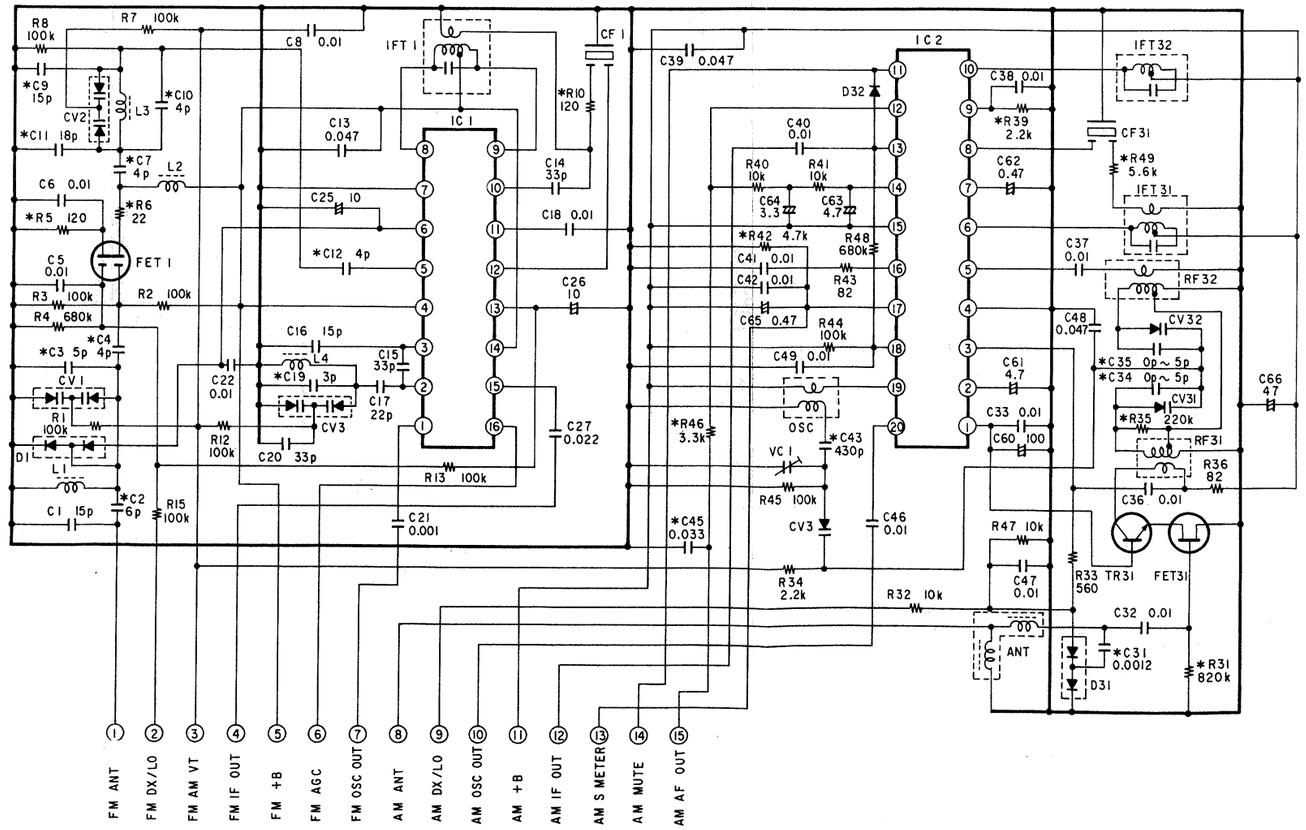
IC–1: LA1175M
FET1: 3SK195
CP1, 2, 3, : HVM27WK
D1: HVM14S
CF1: SFE10.7MS3L-A
L2: 1μH

IC-2: LA1137MN
FET31: 2SK1070
TR31: 2SC2814
CV31, 32, 33: SVC353
D31: HVM14S
D32: HSK120
CF31: PFB450J3

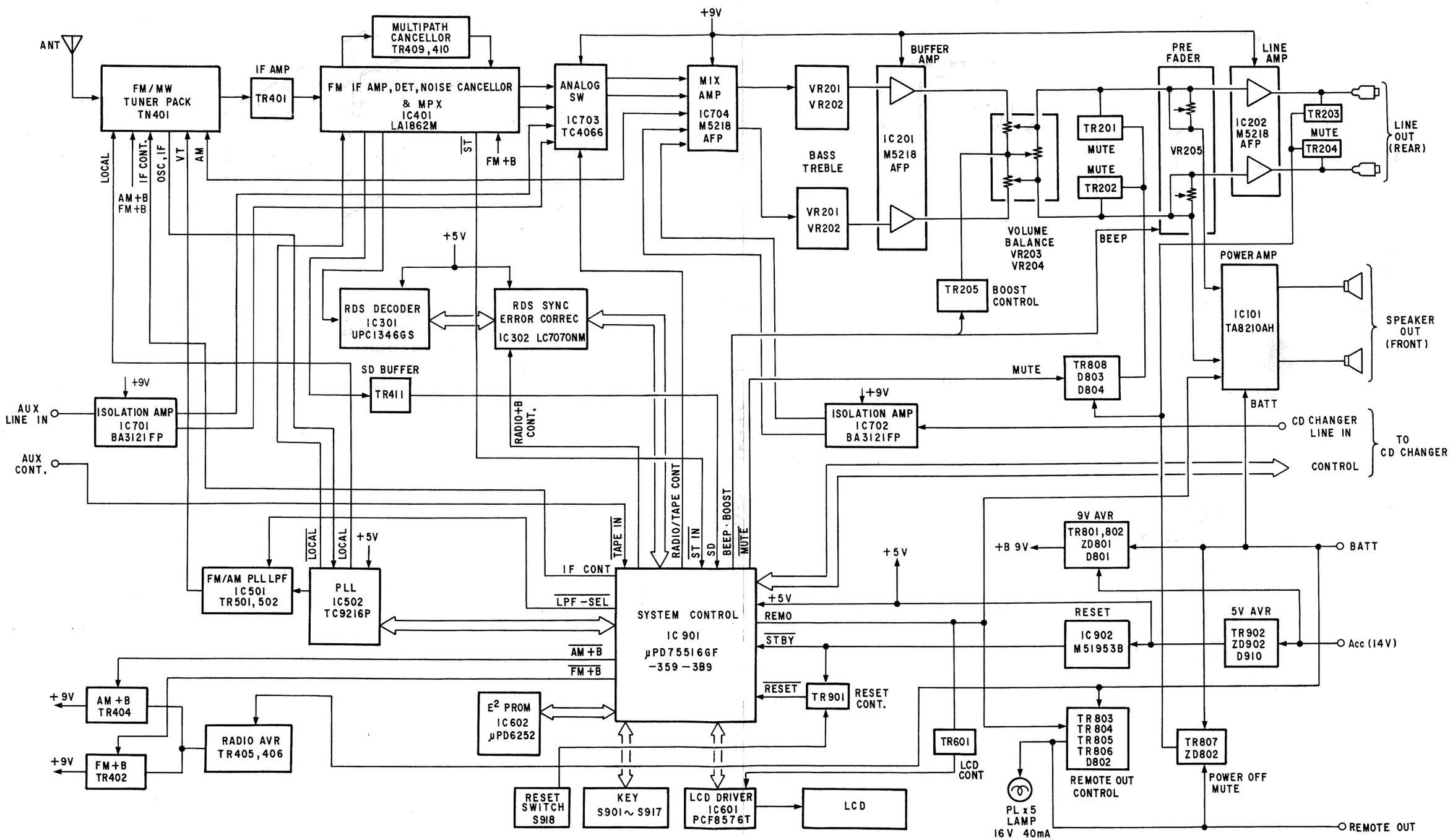


Terminal Connections	
1	FM ANT
2	FM DX/LO
3	FM/AM VT
4	FM IF OUT
5	FM +B
6	FM AGC
7	FM OSC OUT
8	AM ANT
9	AM DX/LO
10	AM OSC OUT
11	AM +B
12	AM IF OUT
13	AM S METER
14	AM MUTE
15	AM AF OUT

SCHEMATIC DIAGRAM FM/AM TUNER UNIT



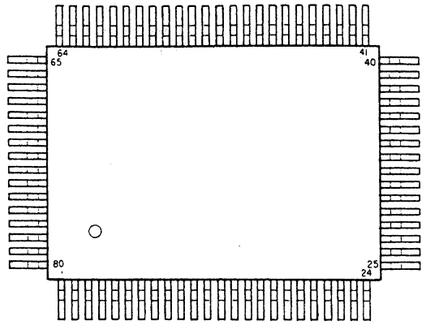
BLOCK DIAGRAM



SEMICONDUCTORS

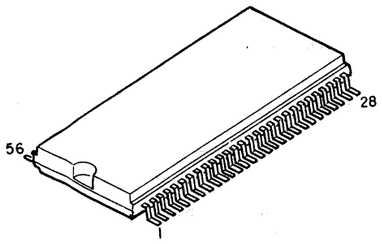
● IC's

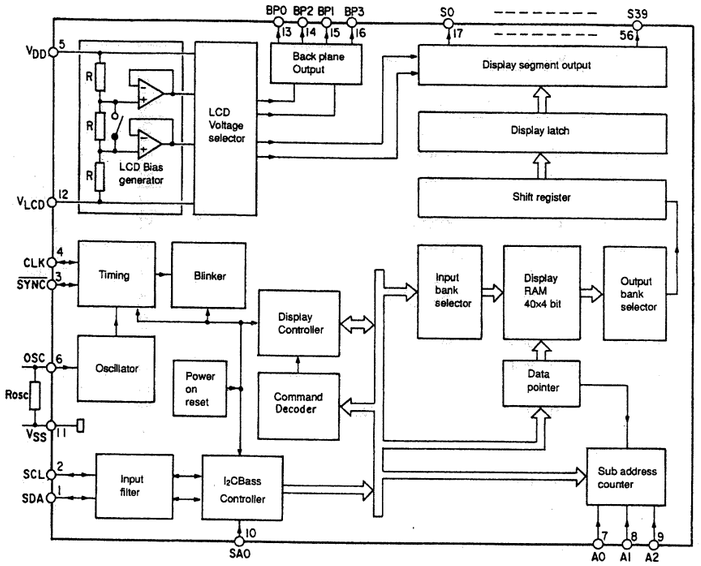
µPD75516G-359-3B9
(IC901)



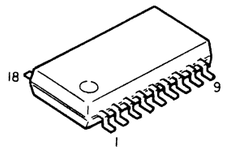
Pin No.	Name of Port	Name	Active	I/O	Description
1	AN0	S Meter		IN	Reception signal strength measuring input.
2	AV ref	AVref IN	L	IN	Reference voltage input terminal of AD converter.
3	VDD	VDD		IN	Power input.
4	VDD	VDD	...	IN	Power input.
5	P113	DOLBY	L	OUT	DOLBY ON/OFF control output.Outputs "L" in DOLBY ON (TAPE mode).
6	P112	METAL	H	OUT	METAL ON/OFF control output.
7	P111	AMS	H	OUT	ON/OFF control output of tape cuing. "L" at PLAY mode.
8	P110	R/T, CD VOICE	L	OUT	RADIO/TAPE,CD voice switching output. "L" to RADIO, "H" to TAPE,CD voice.
9	P103	NC		OUT	
10	P102	NC		OUT	
11	P101	NC		OUT	
12	P100	LCD CLK	...	OUT	Serial clock output for LCD driver (PCF8576T).
13	P93	LCD DATA	...	OUT	Serial output for LCD driver (PCF8576T).
14	P92	NC		OUT	
15	P91	NC		OUT	
16	P90	NC		OUT	
17	P83 SI 1	NC		IN	
18	P82 S0 1	NC		IN	
19	P81 SCK1	NC		IN	
20	P80 PP0	NC		IN	
21	P73 KR7	KDIN4	...	IN	KEY & diode return input.
22	P72 KR6	KDIN3	...	IN	KEY & diode return input.
23	P71 KR5	KDIN2	...	IN	KEY & diode return input.
24	P70 KR4	KDIN1	...	IN	KEY & diode return input.
25	P33	PLLDS		OUT	Serial input/output timing for PLL.
26	P32	PLLCLK		OUT	Serial clock output for PLL.
27	P31	PLLOUT		I/O	Serial data input/output for PLL.
28	P60 KR0	NC		I/O	
29	P53	NC		I/O	
30	P52	MOTOR	H	OUT	ON/OFF control of deck motor. Outputs "H" to turn ON motor.
31	P51	DSCAN1	...	OUT	Initial setting diode matrix signal output.
32	P50	KSCAN5	...	OUT	KEY matrix signal output.
33	Vss	GND	...	...	Ground terminal.
34	P43	KSCAN4	...	OUT	KEY matrix signal output.
35	P42	KSCAN3	...	OUT	KEY matrix signal output.
36	P41	KSCAN2	...	OUT	KEY matrix signal output.
37	P40	KSCAN1	...	OUT	KEY matrix signal output.
38	P63 KR3	CS6252	...	OUT	Chip select control output for external RAM (µPD-6252).
39	P62 KR2	SCL6252	...	OUT	Serial clock output for external RAM (µPD-6252).
40	P61 KR1	SDA6252	...	OUT	Serial data input/output for external RAM (µPD-6252).
41	P30	CDCHK		I/O	Resets CD auto-changer. Detects presence of CD auto-changer.
42	P23 BUZ	NC		OUT	
43	P22 PCL	CDSELECT		OUT	Decides data transmit timing for CD auto-changer.
44	P21	REMOTE	H	OUT	Informs power ON/OFF to external equipment.
45	P20 PT00	BEEP ALARM	...	OUT	BEEP tone and ALARM tone output terminal.
46	P13 TIO	CDMUTE		IN	Mute timing input terminal from CD auto-changer.
47	P12 INT2	RDSIN	...	IN	Serial data input for RDS decoder (LC-7070).
48	P11 INT1	RDSCLK	...	IN	Serial data clock input for RDS decoder (LC-7070).
49	P10 INT0	RDSSTART	...	IN	Serial data start input for RDS decoder (LC-7070).
50	P03 SIO	CDIN		IN	Serial data input from CD auto-changer.
51	P02 S00	NC		IN	
52	P01 SCK0	CDCLK		IN	Serial clock input from CD auto-changer.
53	P00 INT4	STBY	H	IN	Inputs "L" to stop system clock oscillation and becomes memory hold. Inputs "H" to start system clock oscillation and becomes operating state.
54	Vss	GND			
55	XT1	SUB X'TAL		IN	Not used.
56	XT2	SUB X'TAL		IN	Not used.
57	IC	GND			
58 59	X1 X2	X'TAL	...	IN	Connecting terminal of crystal oscillator.
60	REST	RESET	L	IN	System reset input terminal.
61	P143	CDOUT		OUT	Serial data output for CD auto-changer.
62	P142	CDCLK		OUT	Serial clock output for CD auto-changer.
63	P141	IFCONT	H	OUT	ON/OFF terminal of signal for IF count.
64	P140	LPFSEL	L	OUT	VCO filter constant selection output. Output "L" while searching.
65	P133	MUTE	H	OUT	Mute output terminal.
66	P132	BOOST	L	OUT	Outputs "L" at boosting sound volume.
67	P131	LOUD	H	OUT	Outputs "H" at LOUD ON.
68	P130	CD.VOICE	H	OUT	Outputs "H" at changing voice of CD auto-changer.
69	P123	AM+B	L	OUT	Outputs "L" at AM.
70	P122	FM+B	L	OUT	Outputs "L" at FM band.
71	P121	RADIO+B	H	OUT	Radio power control. Outputs "H" at Radio on.
72	P120	TAPE+B	H	OUT	Tape power control. Outputs "H" in TAPE mode.
73	AVss	GND			Standard GND potential terminal of A/D converter.
74	P153 AN7	NC	...	...	
75	P152 AN6	FF/REW	L	IN	Detects FF/REW mode. Outputs mute.
76	PI51 AN5	FWD/REV	...	IN	Inputs "H" at forward PLAY.
77	P150 AN4	TAPEIN	L	IN	Inputs "L" at cassette loading.
78	AN3	ST	L	IN	"ST" indicator input.
79	AN2				
80	AN1	SD	H	IN	Station presence detection input.

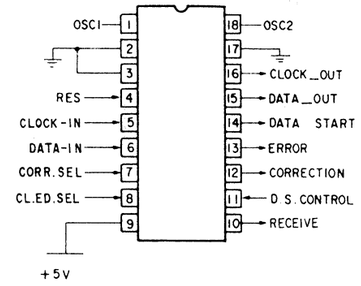
PCF8576T
(IC601)



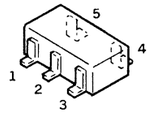


LC7070NM
(IC302)

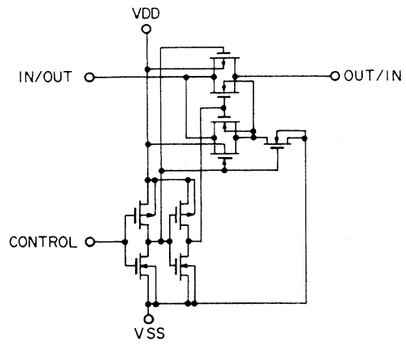




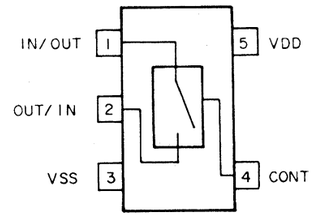
TC4S66F
(IC501)



1:IN/OUT
2:OUT/IN
3:VSS
4:CONT
5:VDD



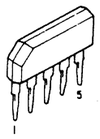
PIN ASSIGNMENT (TOP VIEW)

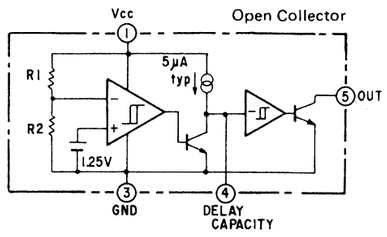


TRUTH TABLE

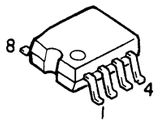
CONTROL	Impedance Between IN/OUT–OUT/IN
H	$0.5 \sim 5 \times 10^2$ ohm
L	$>10^9$ ohm

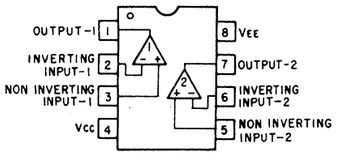
M51953B
(IC902)



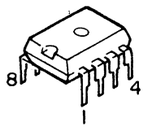


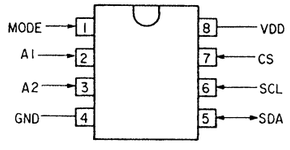
M5218FP
(IC201, 202, 704)



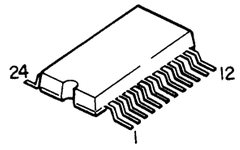


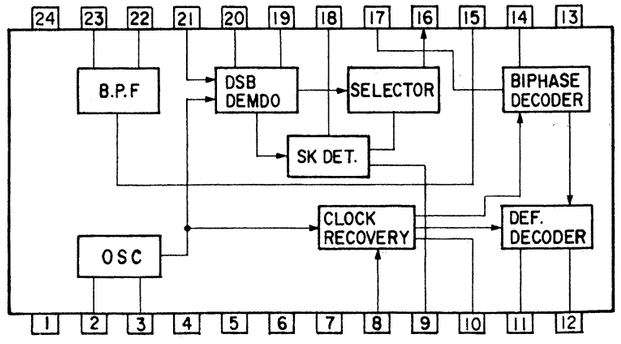
µPD6252C
(IC602)



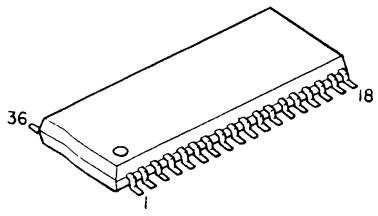


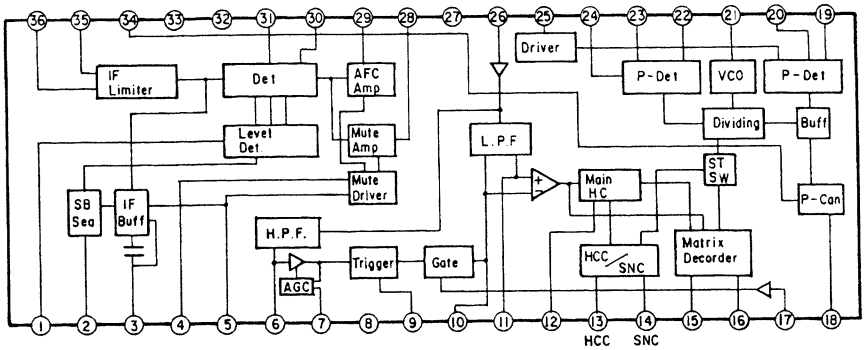
µPC1346GS
(IC301)





LA1862M
(IC401)

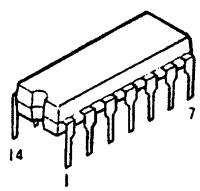




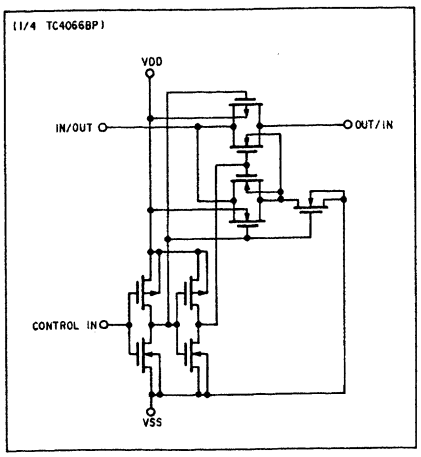
LM1862M Terminal Function

Pin No.	Function	Pin No.	Function
1	S-Meter output terminal.	19	Pilot detector.
2	IF buffer sensitivity control.	20	Pilot detector.
3	IF buffer output terminal.	21	VCO
4	Mute starting point control.	22	Phase detector.
5	Mute drive control terminal.	23	Phase detector.
6	Noise sensitivity control.	24	PLL input terminal.
7	Noise AGC sensitivity control.	25	Stereo indicator lamp terminal.
8	Vcc	26	Noise canceller input.
9	Gate time control terminal.	27	GND.
10	Memory circuit.	28	Muting amp output terminal. (AF output)
11	LFP output.	29	AFC output terminal.
12	High-cut attenuator control.	30	Peak detector input.
13	HCC control input.	31	IF output.
14	SNC control input.	32	Muting attenuator control.
15	MPX left output.	33	Regulator output.
16	MPX right output.	34	Pilot cancel signal detector.
17	Pilot cancel signal input.	35	IF bias.
18	Pilot cancel signal output.	36	IF input.

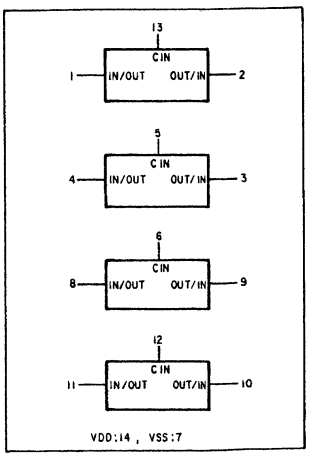
TC4066BP
(IC703)



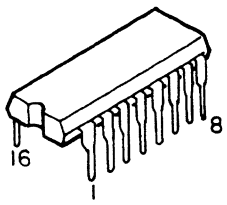
SCHEMATIC DIAGRAM

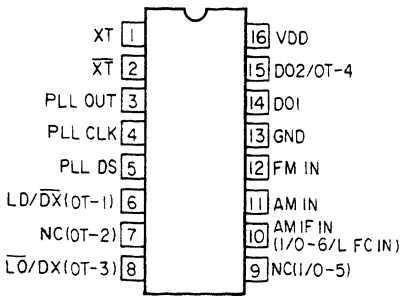


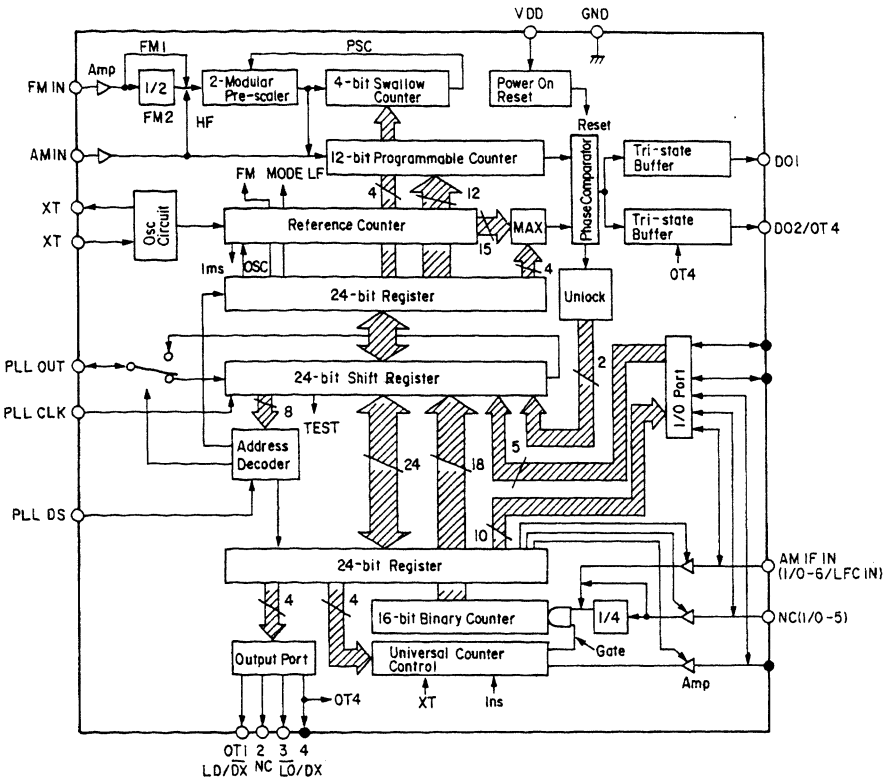
BLOCK DIAGRAM



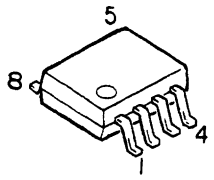
TC9216P
(IC502)

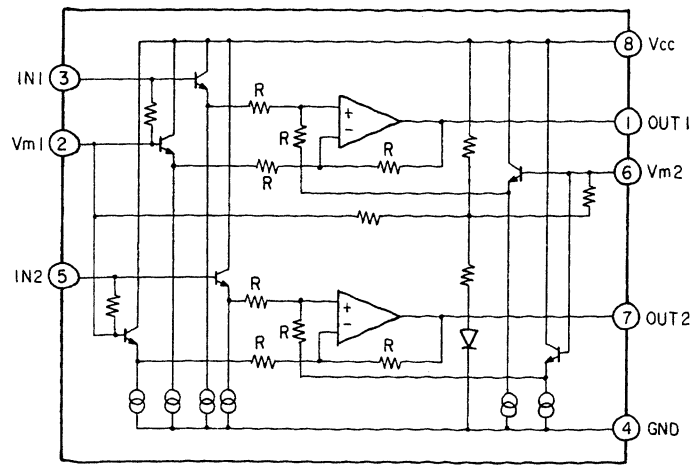




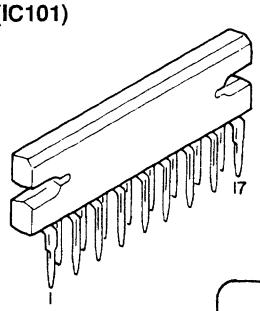


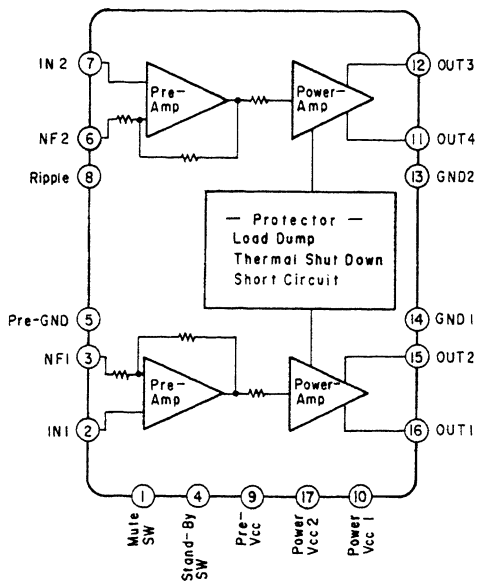
BA3121F
(IC701, 702)





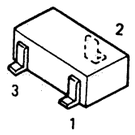
TA8210AH
(IC101)





• TRANSISTORS

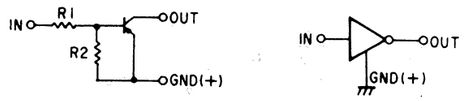
Digital Transistor (Including Resistors)



1:GND/Emitter
2:Out/Collector
3:In/Base

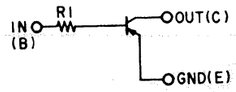
DTA114EK
DTA115EK
DTA143EK
DTA144TK
DTC114EK
DTC314TK
DTC114TK
DTC144EK
DTC144TK

DTAEK Series



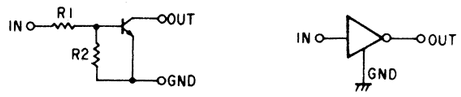
	R1	R2
DTA114EK	10Kohm	10Kohm
DTA115EK	100Kohm	100Kohm
DTA143EK	4.7Kohm	4.7Kohm

DTATK Series



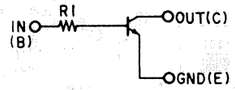
	R1
DTA144TK	47Kohm

DTCEK Series



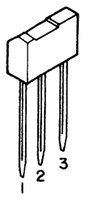
	R1	R2
DTC114EK	10Kohm	10Kohm
DTC144EK	47Kohm	47Kohm

DTCTK Series



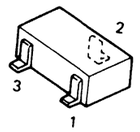
	R1
DTC114TK	10Kohm
DTC144TK	47Kohm
DTC314TK	10Kohm

2SB1237 (Q/R)
2SB1240 (R)
2SD1858 (Q/R)



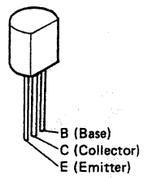
1: Emitter
2: Collector
3: Base

2SA1037K (S/R)
2SA1036K (S/R)
2SC2412K (S)



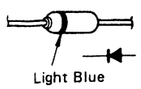
1: Emitter/GND
2: Collector/OUT
3: Base/IN

2SC1815 (BL/GR)

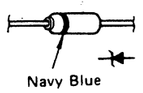


• DIODES (including LED)

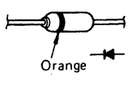
1SS270A



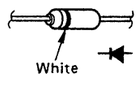
HZS3C-1 HZS7A-1
HZS5A-1 HZS7C-1
HZS5B-1 HZS9C-1
HZS24-1



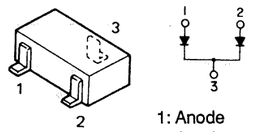
DSP-301N (Surge Protector)



EM2

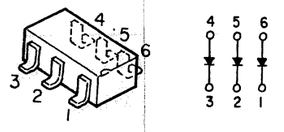


DAN202K
MA151WK

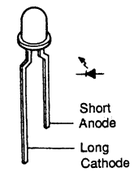


1: Anode
2: Anode
3: Cathode

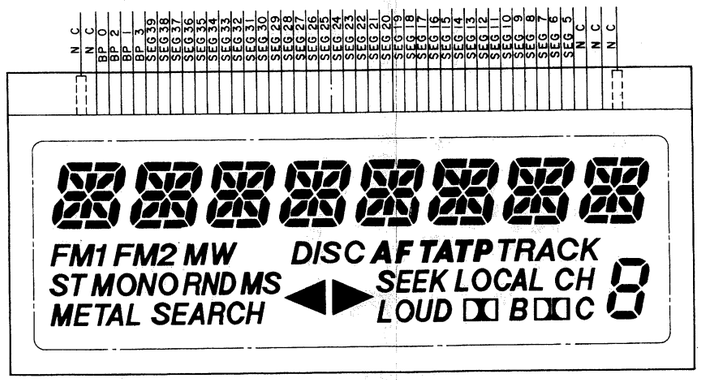
IMN10

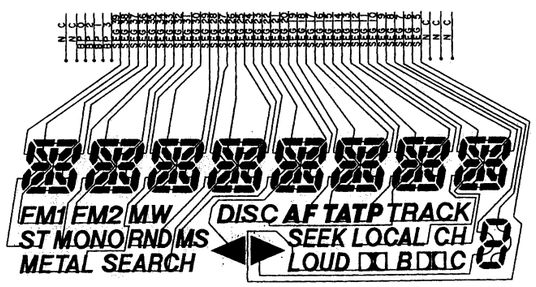


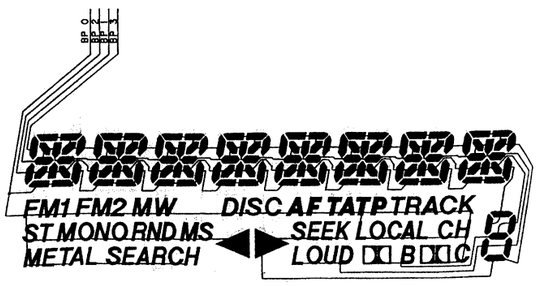
SEL2210R (Red)

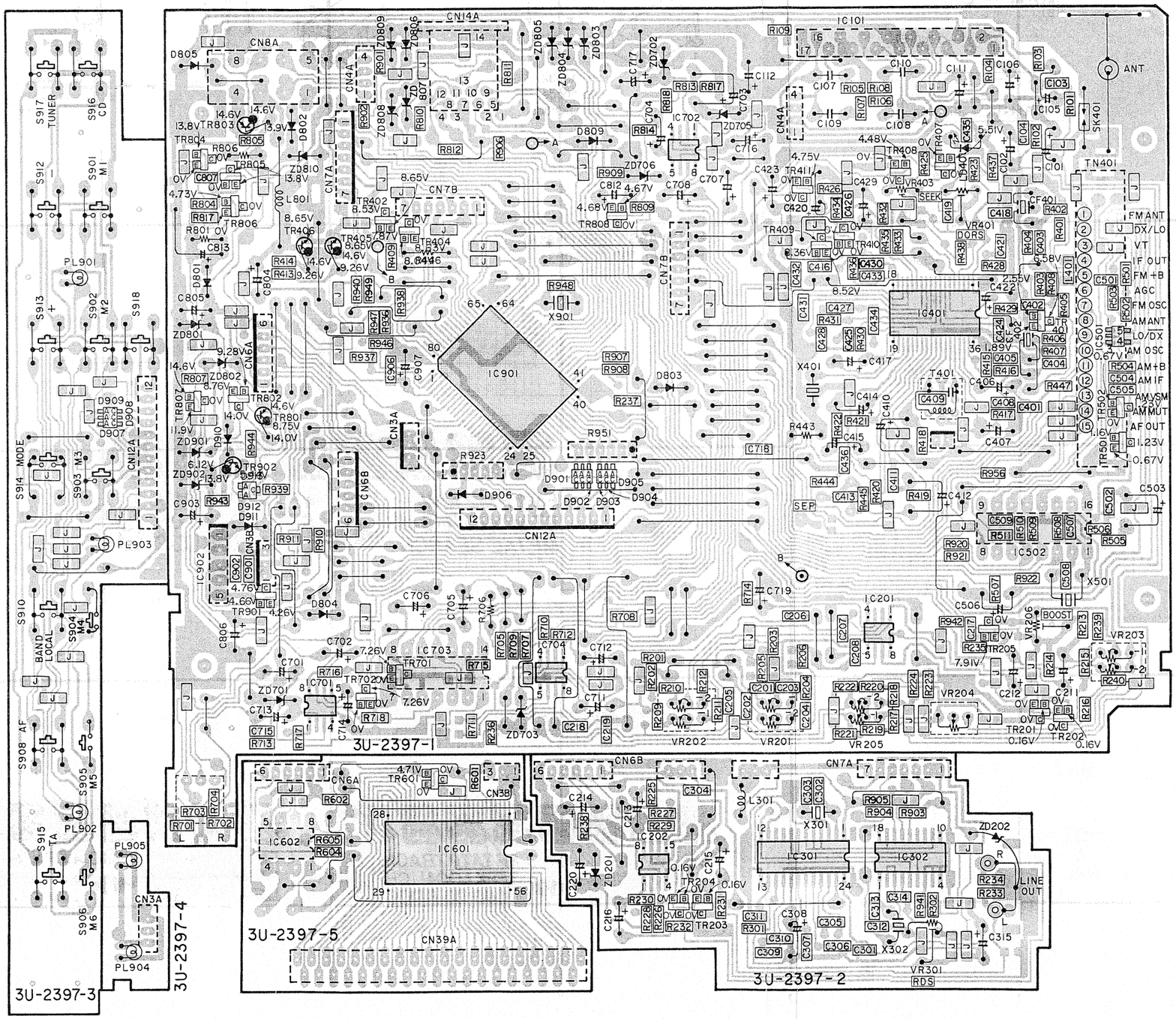


• LCD ASS'Y (FSD11181H)
Parts No. 393 4138 003









IC101

Pin	FM
1	2.78V
2	5.5V
3	5.7V
4	3.56V
5	0V
6	5.75V
7	5.73V
8	5.75V
9	14.6V
10	14.6V
11	6.45V
12	6.49V
13	0V
14	0V
15	6.44V
16	6.51V
17	14.55V

IC201

Pin	FM
1	4.26V
2	4.27V
3	4.27V
4	0V
5	4.27V
6	4.27V
7	4.27V
8	8.76V

IC202

Pin	FM
1	4.35V
2	4.34V
3	4.33V
4	0V
5	4.33V
6	4.34V
7	4.35V
8	8.76V

IC301

Pin	FM
1	4.67V
2	2.14V
3	2.27V
4	0V
5	0V
6	0V
7	4.68V
8	4.68V
9	4.68V
10	0V
11	2.37V
12	2.5V
13	0V
14	2.39V
15	1.47V
16	2.33V
17	2.35V
18	2.37V
19	2.37V
20	2.37V
21	2.35V
22	2.26V
23	2.27V
24	4.68V

IC302

Pin	FM
1	1.91V
2	0V
3	0V
4	4.65V
5	2.37V
6	2.5V
7	4.67V
8	4.67V
9	4.67V
10	0V
11	0V
12	0V
13	0V
14	4.65V
15	4.65V
16	0V
17	0V
18	2.21V

IC401

Pin	FM
1	0.66V
2	8.18V
3	0V
4	0.43V
5	4.74V
6	2.95V
7	0.74V
8	8.53V
9	1.6V
10	4.92V
11	4.85V
12	2.88V
13	0V
14	0V
15	3.14V
16	3.14V
17	4.92V
18	0.1V
19	3.50V
20	3.50V
21	3.79V
22	3.51V
23	3.51V
24	4.84V
25	4.28V
26	4.90V
27	0V
28	4.12V
29	4.31V
30	3.88V
31	3.88V
32	1.98V
33	4.88V
34	3.51V
35	2.95V
36	2.95V

IC501

Pin	FM	AM
1	1.23V	1.46V
2	1.23V	1.48V
3	0V	0V
4	5.5V	5.08V
5	7.87V	7.26V

IC502

Pin	FM	AM
1	2.15V	
2	2.24V	
3	0V	
4	4.73V	
5	4.73V	
6	0V	
7	0V	
8	4.47V	
9	4.53V	
10	2.25V	
11	0V	
12	2.2V	0V
13	0V	0V
14	2.55V	1.55V
15	1.15V	1.13V
16	4.54V	4.61V

TUNER PACK

Pin	FM	AM
1	0V	0V
2	7.23V	0V
3	1.24V	1.46V
4	0V	-0.1V
5	8.51V	0V
6	8.51V	0V
7	2.21V	0V
8	0V	0V
9	0V	0V
10	0V	2.25V
11	0V	7.88V
12	2.25V	2.29V
13	0V	1.1V
14	0V	0V
15	-0.2V	3.61V

IC601

Pin	FM
1	4.79V
2	4.79V
3	4.66V
4	2.51V
5	4.69V
6	0.88V
7	0V
8	0V
9	0V
10	0V
11	0V
12	0V
13	2.36V
14	2.36V
15	2.37V
16	2.36V
17	2.36V
18	2.36V
19	2.37V
20	2.36V
21	2.36V
22	2.36V
23	2.36V
24	2.36V
25	2.36V
26	2.36V
27	2.37V
28	2.36V
29	2.36V
30	2.36V
31	2.36V
32	2.36V
33	2.36V
34	2.36V
35	2.36V
36	2.36V
37	2.36V
38	2.36V
39	2.36V
40	2.36V
41	2.36V
42	2.36V
43	2.36V
44	2.36V
45	2.36V
46	2.36V
47	2.36V
48	2.36V
49	2.36V
50	2.36V
51	2.36V
52	2.36V
53	2.36V
54	2.36V
55	2.36V
56	2.36V

IC602

Pin	FM
1	4.67V
2	0V
3	0V
4	0V
5	4.67V
6	4.77V
7	0V
8	4.68V

IC701

Pin	FM
1	4.88V
2	4.84V
3	4.82V
4	0V
5	4.82V
6	4.81V
7	4.87V
8	8.77V

IC702

Pin	FM
1	4.87V
2	4.84V
3	4.80V
4	0V
5	4.81V
6	4.81V
7	4.85V
8	8.77V

IC703

Pin	FM	AM
1	4.87V	
2	3.19V	0V
3	3.19V	0V
4	4.87V	
5	0V	
6	7.25V	
7	0V	
8	3.17V	0V
9	3.17V	0V
10	3.17V	0V
11	3.17V	0V
12	7.25V	
13	0V	
14	8.75V	

IC704

Pin	FM
1	4.27V
2	4.27V
3	4.27V
4	0V
5	4.27V
6	4.27V
7	4.26V
8	8.75V

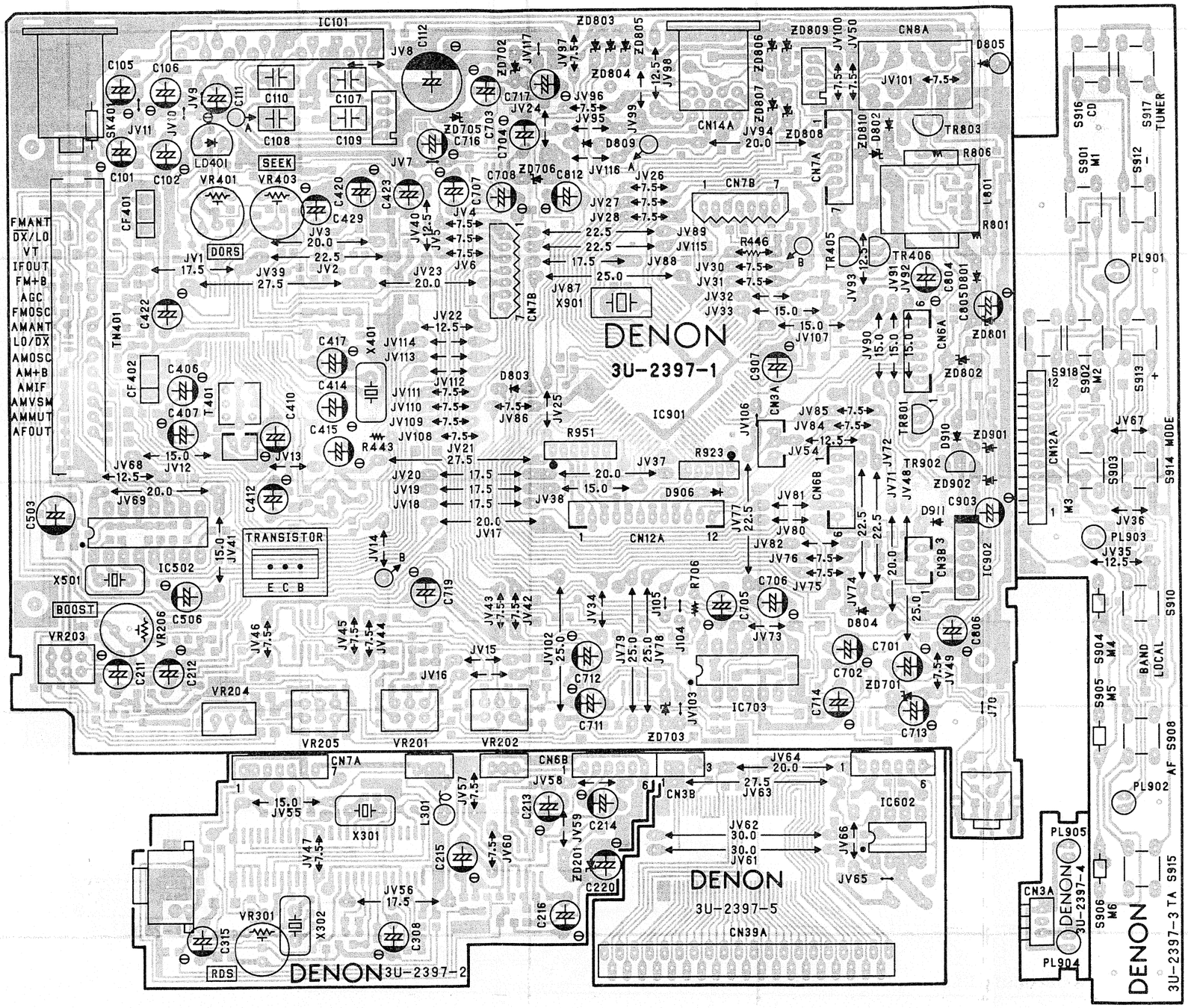
IC901

Pin	FM	Pin	AM
1	0.23V	41	0V
2	4.21V	42	0V
3	4.79V	43	2.25V
4	4.79V	44	4.73V
5	4.79V	45	0V
6	0V	46	0V
7	0V	47	4.66V
8	0V	48	0V
9	0V	49	4.66V
10	0V	50	0V
11	0V	51	0V
12	4.80V	52	0V
13	4.79V	53	4.68V
14	0V	54	0V
15	0V	55	0V
16	0V	56	4.79V
17	0V	57	0V
18	0V	58	2.37V
19	0V	59	2.49V
20	0V	60	4.79V
21	0V	61	0.18V
22	0V	62	0.18V
23	0V	63	0V
24	0V	64	5.51V
25	4.79V	65	4.68V
26	4.79V	66	8.02V
27	0V	67	0V
28	0V	68	0V
29	0V	69	8.07V
30	0V	70	0.16V
31	0V	71	4.68V
32	0V	72	0V
33	0V	73	0V
34	0V	74	0V
35	0.1V	75	4.69V
36	0V	76	4.69V
37	0.1V	77	4.69V
38	0V	78	4.28V
39	4.8V	79	0V
40	4.70V	80	0V

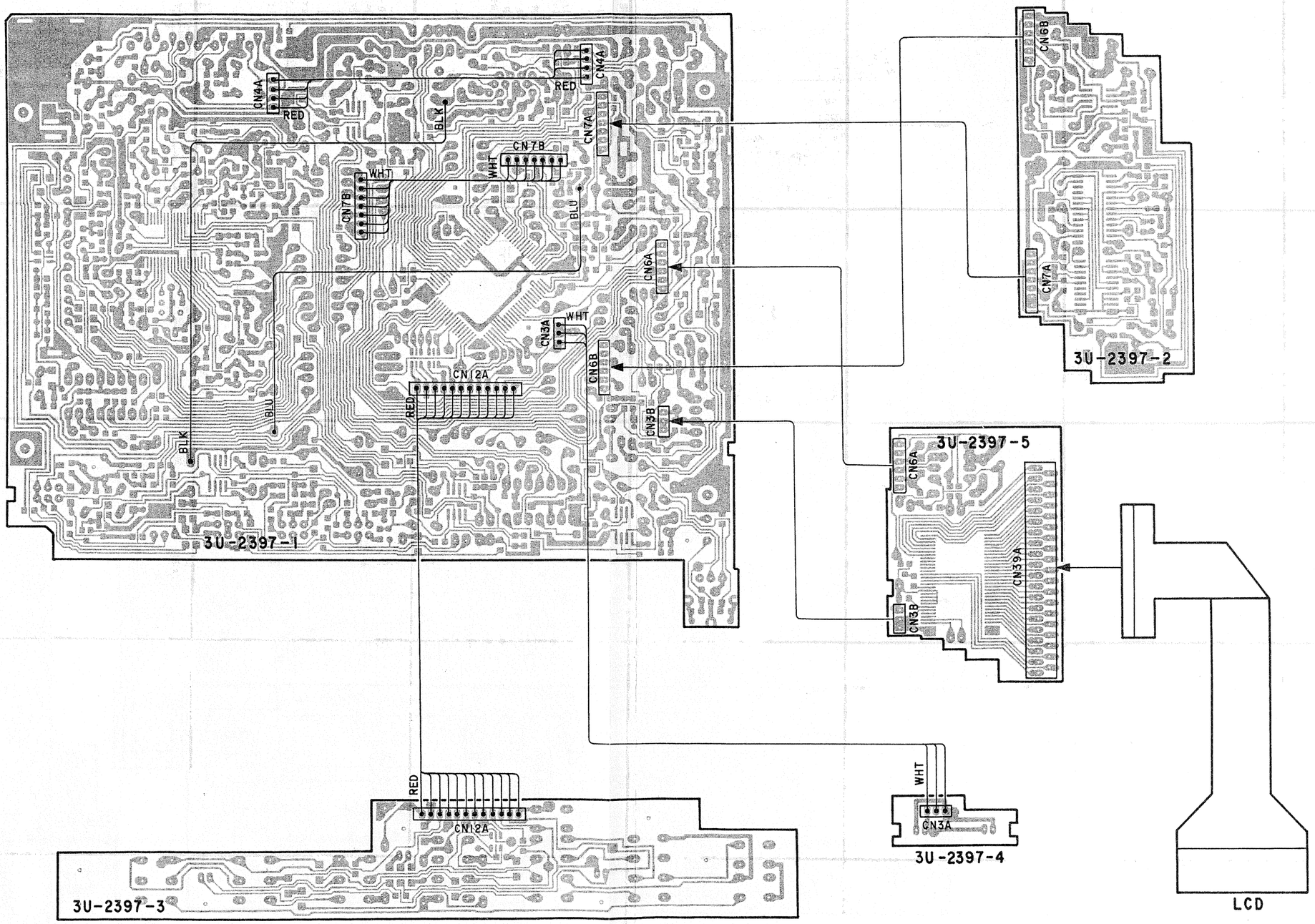
IC902

Pin	FM
1	5.44V
2	0V
3	0V
4	1.27V
5	4.66V

Component Side

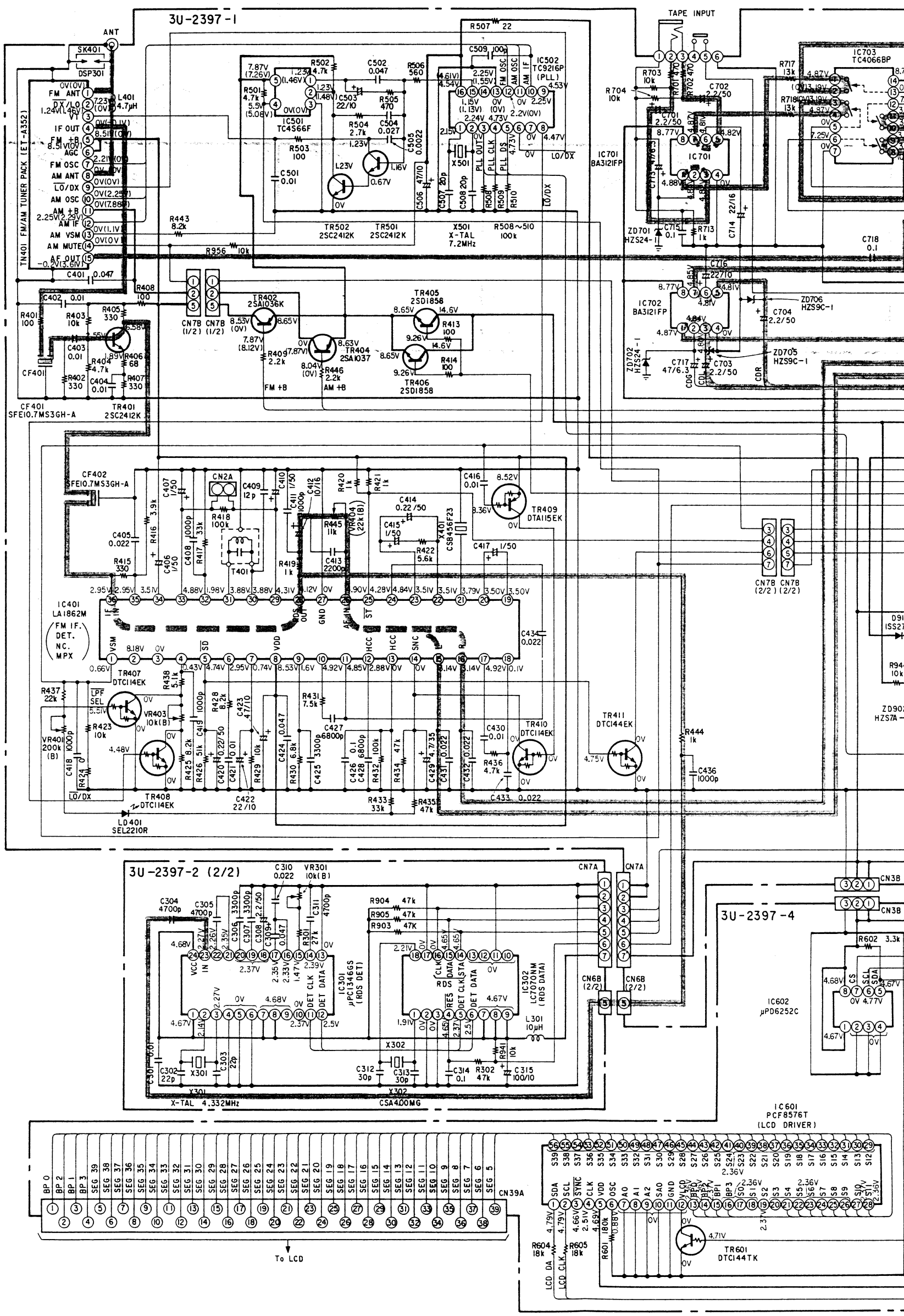


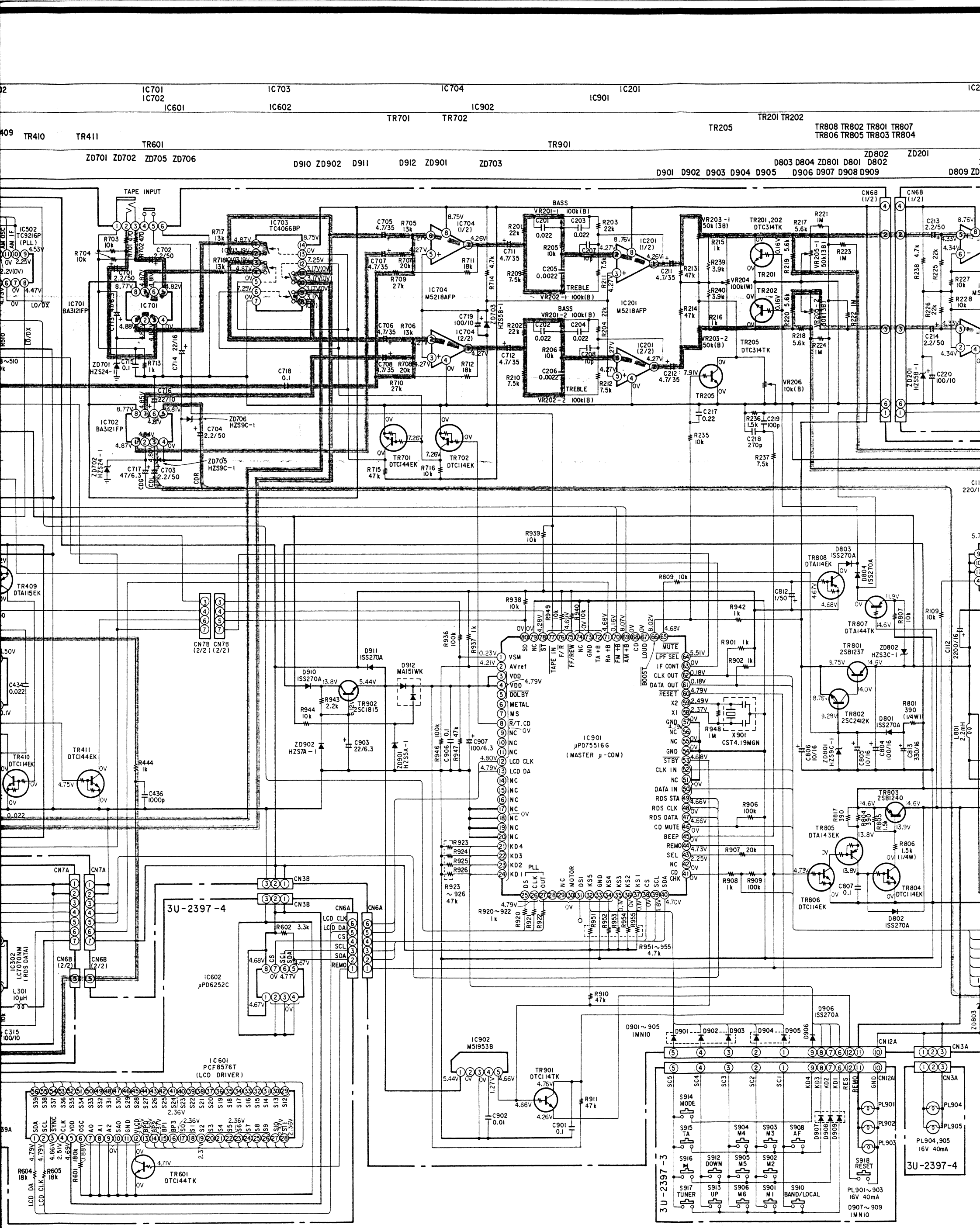
WIRING DIAGRAM



SCHEMATIC DIAGRAM

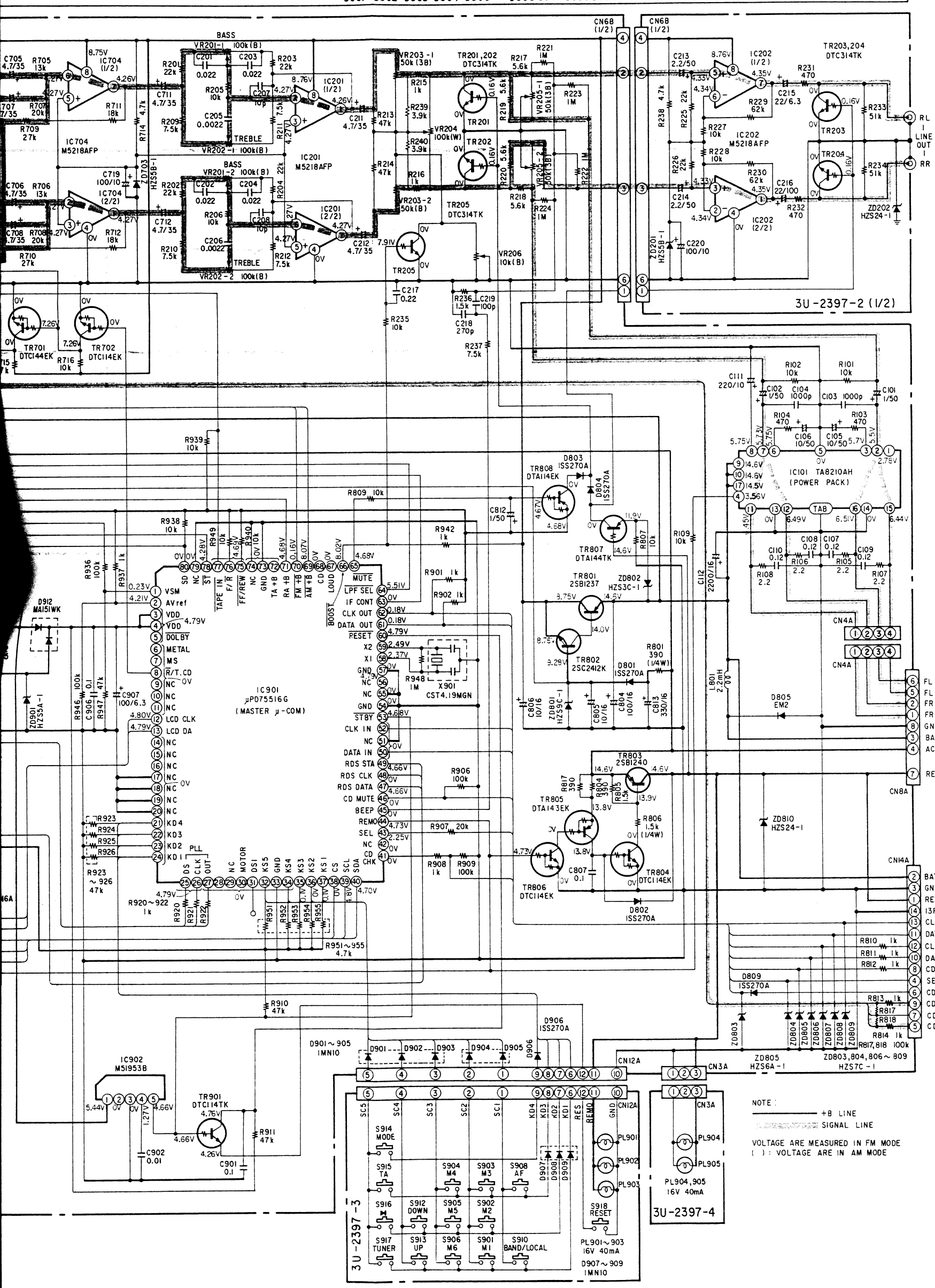
IC	IC501 IC401 IC301 IC302 IC502 IC701 IC702 IC601 IC703 IC602
Transistor	TR401 TR407 TR408 TR402 TR404 TR502 TR501 TR406 TR405 TR409 TR410 TR411 TR601
(including LED)	LD401 ZD701 ZD702 ZD705 ZD706 D910





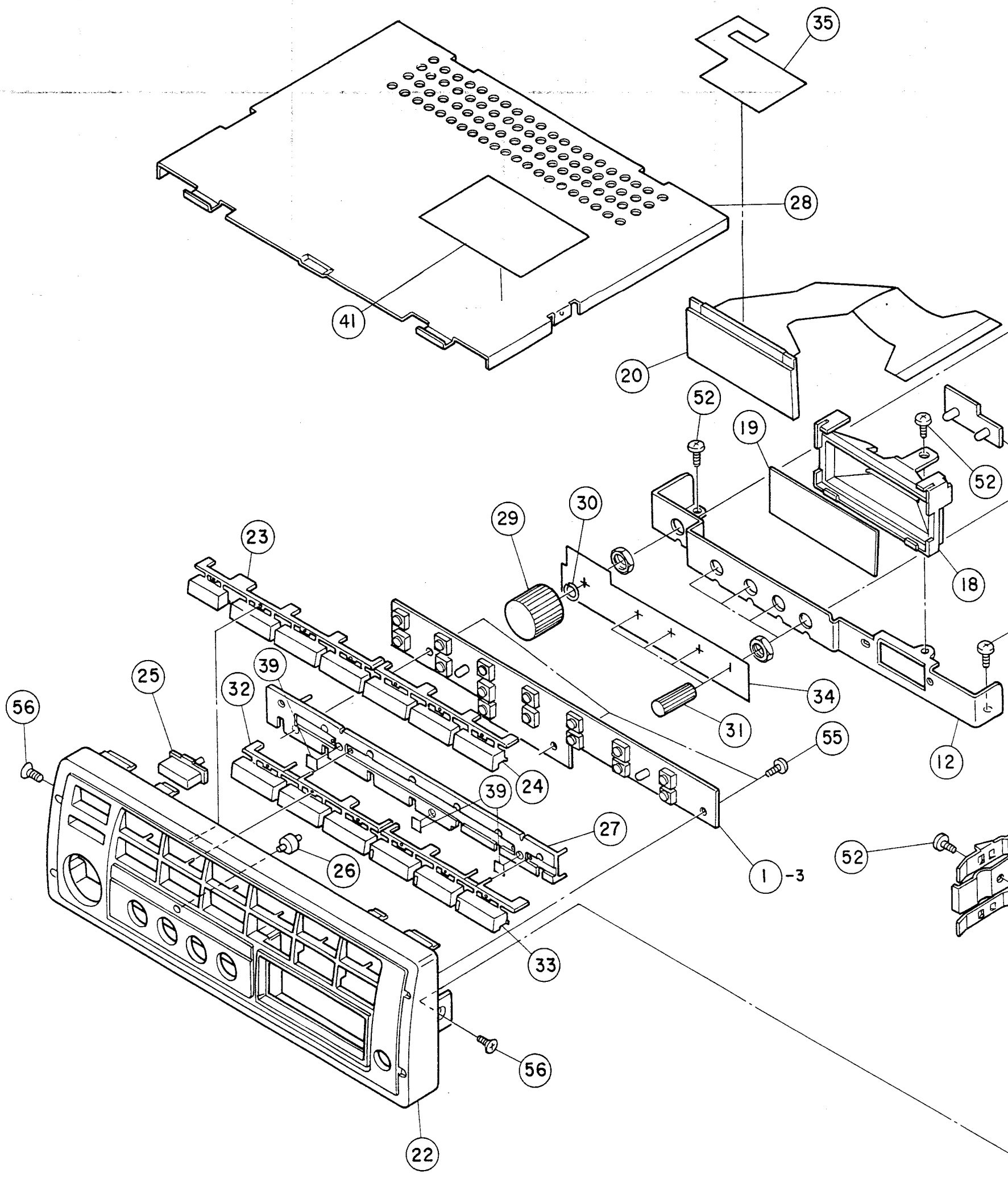
NOTES
ALL RESISTANCE VALUES
ALL CAPACITANCE VALUE
EACH VOLTAGE AND CUR
CIRCUIT AND PARTS ARE

IC704 IC201 IC202 IC101
IC901
IC902
TR701 TR702 TR201 TR202 TR203 TR204
TR205 TR808 TR802 TR801 TR807
TR806 TR805 TR803 TR804
TR901
ZD802 ZD201
D912 ZD901 ZD703 ZD810 D805 ZD202
D803 D804 ZD801 D801 D802 ZD809
D901 D902 D903 D904 D905 D906 D907 D908 D909 D809 ZD803 ZD804 D805 D806 ZD807 ZD808

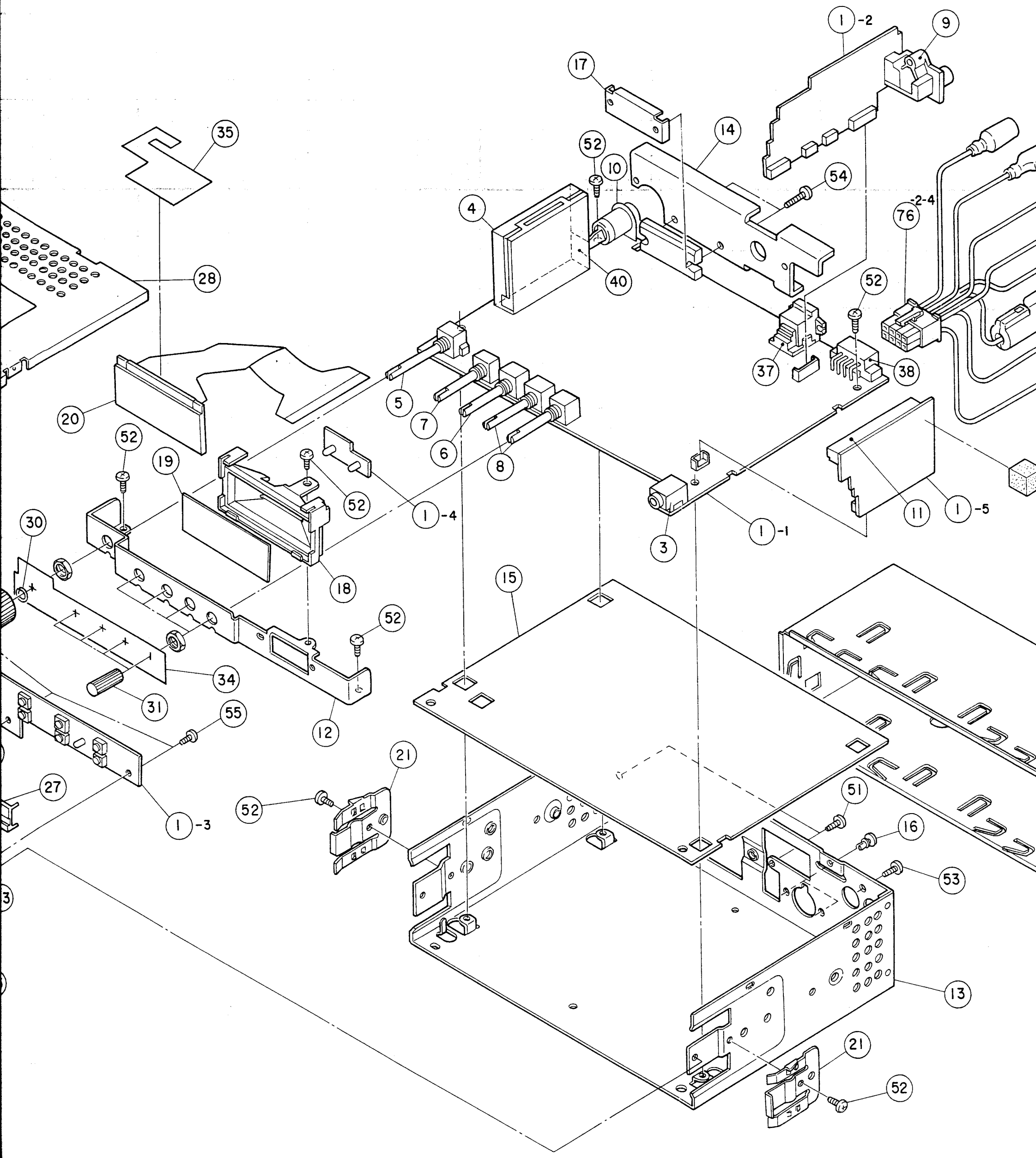


NOTES
ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

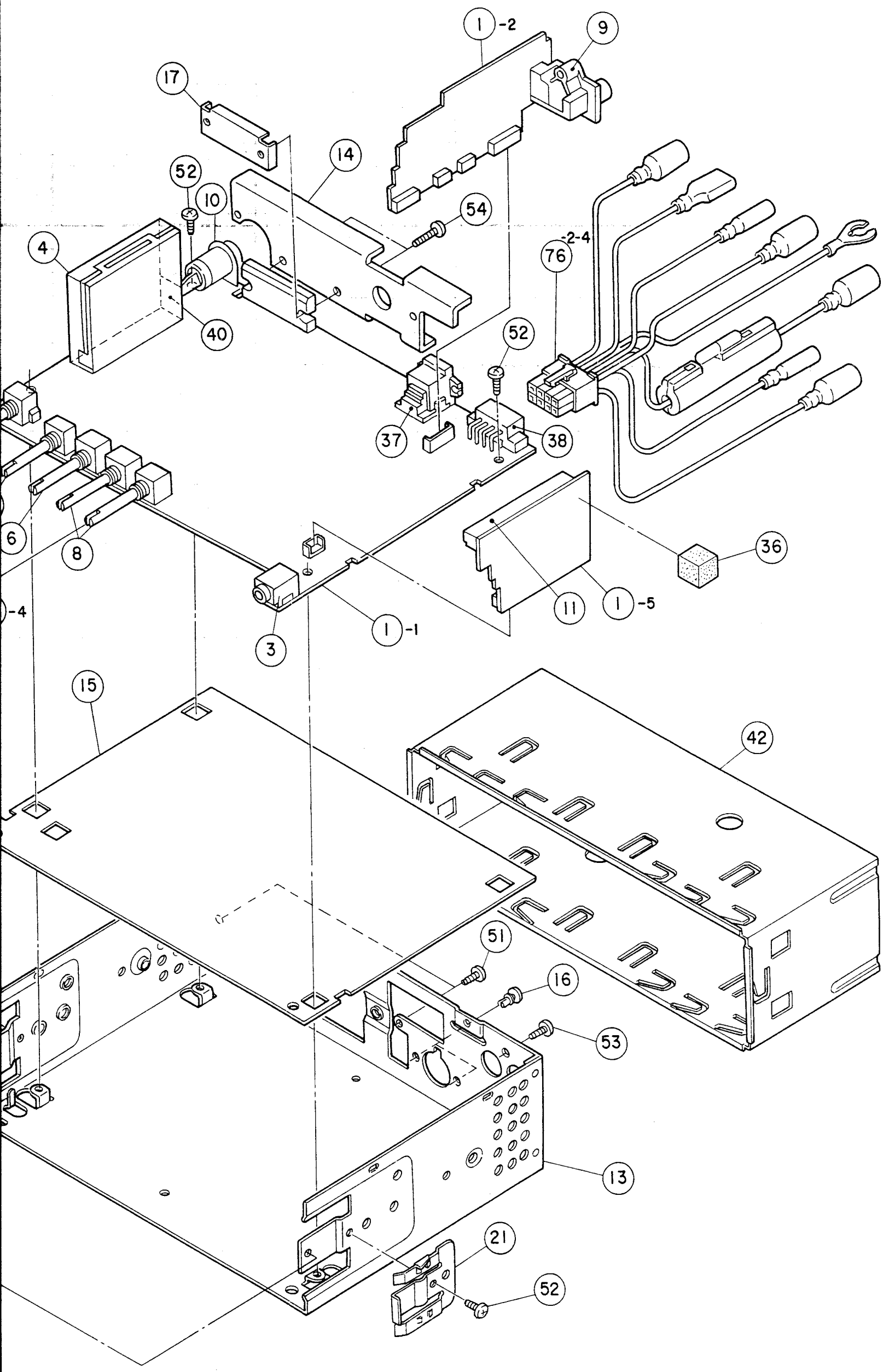
EXPLODED VIEW OF CHASSIS AND CABINET



WARNING:
Parts marked with this symbol ⚠ ▨ have c
Use ONLY replacement parts recommended f



WARNING:
Parts marked with this symbol ⚠ ▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.



PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks	Q'ty
◉ 1	3U- 2397	Main Unit Ass'y		1S
1-1	—	Main Unit		(1)
1-2	—	Line Amp Unit		(1)
1-3	—	Front Unit		(1)
1-4	—	Lamp Unit		(1)
1-5	—	LCD Unit		(1)
2	—	—		
3	204 8397 003	JACK (3.5 SW)		1
4	216 0088 009	FM/AM Tuner Pack		1
5	211 0754 105	Variable Resistor 50 Kohm		1
6	211 0755 104	Variable Resistor 50 Kohm		1
7	211 0756 103	Variable Resistor 100 Kohm		1
8	211 0757 102	Variable Resistor 100 Kohm		2
9	204 8408 002	2P Pin Jack		1
10	204 8409 001	Ant. Jack		1
11	205 0746 008	39P FPC Conn. Base		1
◉ 12	411 1161 203	Front Bracket		1
◉ 13	411 1162 105	Main Chassis		1
14	417 0457 107	Radiator		1
15	415 0639 204	Insulating Sheet		1
16	477 0210 003	Push Rivet		2
17	412 3107 103	IC Holder		1
18	441 1303 101	LCD Holder		1
19	143 0752 008	Filter		1
20	393 4138 003	LCD Ass'y	(FSD11181H)	1
21	461 0704 006	Snap Plate		2
◉ 22	103 1553 004	Front Panel Ass'y		1
23	113 1515 007	Function Button LU		1
24	113 1516 006	Function Button RU		1
25	113 1526 009	CD Button		1
26	113 1518 004	Reset Button		1
27	143 0791 108	Lens		1
28	412 3490 001	Top Cover		1
29	112 0709 002	Vol. Knob		1
30	463 0714 005	Knob Spring		1
31	112 0711 003	Tone Knob		4
32	113 1524 001	Function Button LD		1
33	113 1525 204	Function Button RD		1
34	143 0822 006	Sheet (S)		1
35	415 0662 103	Earth Sheet		1
36	461 0725 001	Spaser		1
37	204 8215 004	13P DIN JACK		1
38	205 0750 081	8P Conn. Base (5569)		1
39	414 0577 046	Sheet	for Lens	3
40	415 0663 005	Spacer (A)		1
◉ 41	513 1916 000	Rating Sheet		1
◉ 42	412 2870 004	Sleeve Ass'y		1
SCREWS				
51	473 7505 007	Tapping Screw (P) 2.6×8		2
52	473 7016 020	Tapping Screw (S) 2.6×6		7
53	473 7500 015	Tapping Screw (P) 3×8		1
54	471 3306 013	Bind Screw 3×12		2
55	473 7506 019	Tapping Screw (P)2×6		3
56	471 2303 020	F.H. Screw 3×6		2

Ref. No.	Part No.	Part Name	Remarks	Q'ty
PACKING & ACCESSORIES (Not including EXPLODED VIEW)				
71	513 1542 005	Serial No. Sheet		1
72	206 1017 027	Fuse (8A) L=30		1
◉ 73	505 0027 009	Poly Cover		1
◉ 74	515 0480 009	DENON Card		1
◉ 75	505 0099 024	Poly Cover	for Set	1
◉ 76	GEN 1945	Envelope Sub Ass'y		1S
76-1	505 0099 037	Poly Cover		(1)
76-2-1	511 2299 005	Inst. Manual		(1)
76-2-2	511 2317 000	Inst. Manual		(1)
76-2-3	443 1186 007	Hook bar		(1)
76-2-4	204 2516 000	8P Wire Ass'y		(1)
76-3	505 0240 006	Envelope Ass'y		(1)
76-3-1	505 0099 082	Poly Cover		(1)
76-3-2	477 0291 006	Hex. Screw 5×20		(1)
76-3-3	475 1006 003	Washer ϕ5		(1)
76-3-4	475 6010 007	Nut M5		(1)
76-3-5	477 0271 000	Special Bolt		(1)
◉ 77	503 0999 005	Cushion		2
78	502 0794 003	Support Cushon		2
◉ 79	412 2036 000	Metal Mount Strap		1
◉ 80	501 1597 002	Individual Carton		1
◉ 81	501 1596 016	Master Carton		1/6
82	513 1338 015	Control Card Base		2
83	513 1349 004	Thermal Carbon Film		1
84	513 1598 004	Boost Label		1

NOTE FOR PARTS LIST

- Part indicated with the mark " ⊙ " are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:

Parts marked with this symbol ⚠ ▒ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

• Resistors

Ex.: RN (Type) 14K (Shape and performance) 2E (Power) 182 (Resistance) G (Allowable error) FR (Others)

RD : Carbon RC : Composition RS : Metallic film RW : Winding RN : Metal film RK : Metal mixture	2B : 1/8W 2E : 1/4W 2H : 1/2W 3A : 1W 3D : 2W 3F : 3W 3H : 5W	F : ±1% G : ±2% J : ±5% K : ±10% M : ±20%	P : Pulse-resistant type NL : Low noise type NB : Non-burning type FR : Fuse-resistor F : Lead wire forming

Resistance

1 8 2 ⇒ 1800 ohm = 1.8 kohm
- 2-digit effective numver, decimal point indicated by R.
- Indicates number of zeros after effective number
- Units: ohm

• Capasitors

Ex.: CE (Type) 04W (Shape and performance) 1H (Dielectric strength) 2R2 (Capasity) M (Allowable error) BP (Others)

CE : Aluminum foil electrolyte CA : Aluminum solid electrolyte CS : Tantalm electrolite CQ : Film CK : Ceramic CC : Ceramic CP : Oil CM : Mica CF : Metallized CH : Metallized	0J : 6.3V 1A : 10V 1C : 16V 1E : 25V 1V : 35V 1H : 50V 2A : 100V 2B : 125V 2C : 160V 2D : 200V 2E : 250V 2H : 500V 2J : 630V	F : ±1% G : ±2% J : ±5% K : ±10% M : ±20% Z : +80% Z : −20% P : +100% −0% C : ±0.25pF D : ±0.5pF = : Others	HS : High stability type BP : Non-polar type HR : Ripple-resistant type DL : For charge and discharge HF : For assuring high frequency U : UL part C : CSA part W : UL-CSA type F : Lead wire forming

Capasity

2 R 2 ⇒ 2.2μF
- 1-digit effective number, decimal point indicated by R.
- 2-digit effective numver, decimal point indicated by R.

- Units: μF, (for P, pF (μμF))
- When the dielectric strength is indicated in AC, "AC" is included after

3U-2397 MAIN UNIT ASS'Y PARTS LIST

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC101	263 0717 004	IC TA8210AH	
IC201,202	263 0424 902	IC M5218FP	
IC301	263 0795 903	IC μPC1346GS	
IC302	263 0614 903	IC LC7070NM	
IC401	263 0829 905	IC LA1862M	
IC501	263 0616 901	IC TC4S66F	
IC502	263 0796 009	IC TC9216P	
IC601	262 1605 002	IC PCF8576T	
IC602	262 1410 006	IC μPD6252C	
IC701,702	263 0790 908	IC BA3121F	
IC703	262 0395 009	IC TC4066BP	
IC704	263 0424 902	IC M5218FP	
IC901	262 1582 002	IC μPD75516GF-359-3B9	
IC902	263 0423 000	IC M51953B	
TR201~205	269 0103 904	Transistor DTC314TK	Built in Resistor
TR401	273 0384 900	Transistor 2SC2412K(S)	
TR402	271 0260 905	Transistor 2SA1036K	
TR404	271 0238 908	Transistor 2SA1037K(S/R)	Built in Resistor
TR405,406	274 0146 905	Transistor 2SD1858(Q/R)	
TR407,408	269 0082 902	Transistor DTC115EK	Built in Resistor
TR409	269 0115 905	Transistor DTA115EK	Built in Resistor
TR410	269 0082 902	Transistor DTC114EK	Built in Resistor
TR411	269 0054 901	Transistor DTC144EK	Built in Resistor
TR501,502	273 0384 900	Transistor 2SC2412K(S)	
TR601	269 0085 909	Transistor DTC144TK	Built in Resistor
TR701	269 0054 901	Transistor DTC144EK	Built in Resistor
TR702	269 0082 909	Transistor DTC114EK	Built in Resistor
TR801	272 0099 904	Transistor 2SB1237(Q/R)	
TR802	273 0384 900	Transistor 2SC2412K(S)	
TR803	272 0112 904	Transistor 2SB1240(R)	
TR804	269 0082 902	Transistor DTC114EK	Built in Resistor
TR805	269 0047 905	Transistor DTA143EK	Built in Resistor
TR806	269 0082 902	Transistor DTC114EK	Built in Resistor
TR807	269 0106 901	Transistor DTA114TK	Built in Resistor
TR808	269 0083 901	Transistor DTA114EK	Built in Resistor
TR901	269 0088 906	Transistor DTC114TK	Built in Resistor
TR902	273 0198 934	Transistor 2SC1815(BL/GR)	
D401	276 0560 901	Diode DAN202K	
D801~804	276 0432 903	Diode 1SS270A	
D805	276 0598 009	Diode EM2	
D809	276 0432 903	Diode 1SS270A	
D901	276 0601 909	Diode IMN10	
D903	276 0601 909	Diode IMN10	
D906	276 0432 903	Diode 1SS270A	
D907	276 0601 909	Diode IMN10	
D910,911	276 0432 903	Diode 1SS270A	
D912	276 0428 949	Diode MA151WK	
ZD201	276 0459 902	Zener Diode HZS5B-1	5V
ZD202	276 0481 909	Zener Diode HZS24-1	24V
ZD701,702	276 0481 909	Zener Diode HZS24-1	24V
ZD703	276 0459 902	Zener Diode HZS5B-1	5V
ZD705,706	276 0469 905	Zener Diode HZS9C-1	9V
ZD801	276 0469 905	Zener Diode HZS9C-1	9V
ZD802	276 0454 907	Zener Diode HZS3C-1	3V
ZD803,804	276 0466 908	Zener Diode HZS7C-1	7V
ZD805	276 0461 903	Zener Diode HZS6A-1	6V
ZD806~809	276 0466 908	Zener Diode HZS7C-1	7V
ZD810	276 0481 909	Zener Diode HZS24-1	24V
ZD901	276 0458 903	Zener Diode HZS5A-1	5V
ZD902	276 0464 900	Zener Diode HZS7A-1	7V
LD401	393 9401 900	LED SEL2210R	Red
SK401	399 0039 007	Surge Absorber DSP-301N	

RESISTORS GROUP				Q'ty
	247 0018 905	Chip Resistor 0ohm, 1/10W	RM73B--0R0K	55
	247 1018 904	Chip Resistor 0ohm, 1/8W	RM73B2B0R0K	50
R001~003	241 2397 969	Carbon Film 390ohm, 1/4W	RD14B2E391J(5)	
R101~103	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J	
R104	247 0006 962	Chip Resistor 470 ohm, 1/10W	RM73B--471J	
R105~108	247 0001 909	Chip Resistor 2.2ohm, 1/10W	RM73B--2R2K	
R109	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J	
R201~204	247 0010 961	Chip Resistor 22 Kohm, 1/10W	RM73B--223J	
R205,206	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J	
R209~212	247 0009 956	Chip Resistor 7.5 Kohm, 1/10W	RM73B--752J	
R213,214	247 0011 944	Chip Resistor 47 Kohm, 1/10W	RM73B--473J	
R215	247 1007 944	Chip Resistor 1 Kohm, 1/8W	RM73B2B102J	
R216	247 0007 945	Chip Resistor 1 Kohm, 1/10W	RM73B--102J	
R217~220	247 0009 927	Chip Resistor 5.6 Kohm, 1/10W	RM73B--562J	
R221,222	247 0014 967	Chip Resistor 1 Mohm, 1/10W	RM73B--105J	
R223,224	247 1014 966	Chip Resistor 1 Mohm, 1/8W	RM73B2B105J	
R225,226	247 0010 961	Chip Resistor 22 Kohm, 1/10W	RM73B--223J	
R227,228	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J	
R229,230	247 0011 973	Chip Resistor 62 Kohm, 1/10W	RM73B--623J	
R231,232	247 0006 962	Chip Resistor 470 ohm, 1/10W	RM73B--471J	
R233,234	247 0011 957	Chip Resistor 51 Kohm, 1/10W	RM73B--513J	
R235	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J	
R236	247 0007 957	Chip Resistor 1.5 Kohm, 1/10W	RM73B--152J	
R237	247 0009 956	Chip Resistor 7.5 Kohm, 1/10W	RM73B--752J	
R238	247 0009 901	Chip Resistor 4.7 Kohm, 1/10W	RM73B--472J	
R239,240	247 0008 986	Chip Resistor 3.9 Kohm, 1/10W	RM73B--392J	
R301	247 0010 987	Chip Resistor 27 Kohm, 1/10W	RM73B--273J	
R302	247 0011 944	Chip Resistor 47 Kohm, 1/10W	RM73B--473J	
R401	247 0005 905	Chip Resistor 100 ohm, 1/10W	RM73B--101J	
R402	247 0006 920	Chip Resistor 330 ohm, 1/10W	RM73B--331J	
R403	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J	
R404	247 0009 901	Chip Resistor 4.7Kohm, 1/10W	RM73B--472J	
R405	247 0006 920	Chip Resistor 330 ohm, 1/10W	RM73B--331J	
R406	247 0004 922	Chip Resistor 47 Kohm, 1/10W	RM73B--470J	
R407	247 0006 920	Chip Resistor 330 ohm, 1/10W	RM73B--331J	
R408	247 0005 905	Chip Resistor 100 ohm, 1/10W	RM73B--101J	
R409	247 0008 928	Chip Resistor 2.2 Kohm, 1/10W	RM73B--222J	
R413,414	247 0005 905	Chip Resistor 100 ohm, 1/10W	RM73B--101J	
R415	247 0006 920	Chip Resistor 330 ohm, 1/10W	RM73B--331J	
R416	247 0008 986	Chip Resistor 3.9 Kohm, 1/10W	RM73B--392J	
R417	247 0011 902	Chip Resistor 33 Kohm, 1/10W	RM73B--333J	
R418	247 0012 927	Chip Resistor 100 Kohm, 1/10W	RM73B--104J	
R419~421	247 0007 945	Chip Resistor 1 Kohm, 1/10W	RM73B--102J	

Ref. No.	Part No.	Part Name	Remarks
R422	247 0009 927	Chip Resistor 5.6Kohm, 1/10W	RM73B--562J
R423	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J
R424	247 0018 905	Chip Resistor 0 ohm, 1/10W	RM73B--0R0K
R425	247 0009 909	Chip Resistor 8.2 Kohm, 1/10W	RM73B--822J
R426	247 0011 957	Chip Resistor 51 Kohm, 1/10W	RM73B--513J
R428	247 0009 969	Chip Resistor 8.2 Kohm, 1/10W	RM73B--822J
R429	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J
R430	247 0009 943	Chip Resistor 6.8 Kohm, 1/10W	RM73B--682J
R431	247 0009 956	Chip Resistor 7.5 Kohm, 1/10W	RM73B--752J
R432	247 0012 927	Chip Resistor 100 Kohm, 1/10W	RM73B--104J
R433	247 0011 902	Chip Resistor 33 Kohm, 1/10W	RM73B--333J
R434,435	247 0011 944	Chip Resistor 47 Kohm, 1/10W	RM73B--473J
R436	247 0009 901	Chip Resistor 4.7 Kohm, 1/10W	RM73B--472J
R437	247 1011 901	Chip Resistor 22 Kohm, 1/8W	RM73B2B223K
R438	247 0009 914	Chip Resistor 5.1 Kohm, 1/10W	RM73B--512J
R443	247 2400 979	Carbon Film 8.2 Kohm, 1/4W	RD14B2E822J(5)
R444	247 0007 945	Chip Resistor 1 Kohm, 1/10W	RM73--102J
R445	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J
R446	241 2399 035	Carbon Film 2.2 Kohm, 1/4W	RD14B2E222J(5)
R501,502	247 0009 901	Chip Resistor 4.7 Kohm, 1/10W	RM73B--472J
R503	247 0005 905	Chip Resistor 100 ohm, 1/10W	RM73B--101J
R504	247 0008 944	Chip Resistor 2.7 Kohm, 1/10W	RM73B--272J
R505	247 0006 962	Chip Resistor 470 ohm, 1/10W	RM73B--471J
R506	247 0006 988	Chip Resistor 560 ohm, 1/10W	RM73B--561J
R507	247 0003 949	Chip Resistor 22 ohm, 1/10W	RM73B--220J
R508-510	247 0012 927	Chip Resistor 100 Kohm, 1/10W	RM73B--104J
R511	247 0010 903	Chip Resistor 12 Kohm, 1/10W	RM73B--123J
R601	247 0012 985	Chip Resistor 180 Kohm, 1/10W	RM73B--184J
R602	247 0008 960	Chip Resistor 3.3 Kohm, 1/10W	RM73B--332J
R604,605	247 0010 945	Chip Resistor 18 Kohm, 1/10W	RM73B--183J
R701,702	247 0006 962	Chip Resistor 470 ohm, 1/10W	RM73B--471J
R703,704	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J
R705	247 0010 916	Chip Resistor 13 Kohm, 1/10W	RM73B--133J
R706	241 2401 923	Carbon Film 13 Kohm, 1/4W	RD14B2E133J(5)
R707,708	247 0010 958	Chip Resistor 20 Kohm, 1/10W	RM73B--203J
R709,710	247 0010 987	Chip Resistor 27 Kohm, 1/10W	RM73B--273J
R711,712	247 0010 945	Chip Resistor 18 Kohm, 1/10W	RM73B--183J
R713	247 0007 945	Chip Resistor 1 Kohm, 1/10W	RM73B--102J
R714	247 0009 901	Chip Resistor 4.7 Kohm, 1/10W	RM73B--472J
R715	247 0011 944	Chip Resistor 47 Kohm, 1/10W	RM73B--473J
R716	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J
R717	247 0010 916	Chip Resistor 13 Kohm, 1/8W	RM73B--133J
R718	247 1010 915	Chip Resistor 13 Kohm, 1/8W	RM73B2B133J
R801	241 2397 969	Carbon Film 390 ohm, 1/4W	RD14B2E391J(5)
R804	247 1006 945	Chip Resistor 390 ohm, 1/8W	RM73B2B391J
R805	247 0007 987	Chip Resistor 1.5 Kohm, 1/10W	RM73B-152J
R806	241 2398 997	Carbon Film 1.5 Kohm, 1/4W	RD14B2E152J(5)
R807	247 1009 984	Chip Resistor 10 Kohm, 1/8W	RM73B2B103J
R809	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J
R810-814	247 0007 945	Chip Resistor 1 Kohm, 1/10W	RM73B--102J
R817,818	247 0012 927	Chip Resistor 100 Kohm, 1/10W	RM73B--104J
R901,902	247 0007 945	Chip Resistor 1 Kohm, 1/10W	RM73B--102J
R903-905	247 0011 944	Chip Resistor 47 Kohm, 1/10W	RM73B--473J
R906	247 0012 927	Chip Resistor 100 Kohm, 1/10W	RM73B--104J
R907	247 0010 958	Chip Resistor 20 Kohm, 1/10W	RM73B--203J
R908	247 0007 945	Chip Resistor 1 Kohm, 1/10W	RM73B--102J
R909	247 0012 927	Chip Resistor 100 Kohm, 1/10W	RM73B--104J

Ref. No.	Part No.	Part Name	Remarks	Q'ty
R910,911	247 0011 944	Chip Resistor 47 Kohm, 1/10W	RM73B--473J	
R920-922	247 0007 945	Chip Resistor 1 Kohm, 1/10W	RM73B--102J	
R936	247 0012 927	Chip Resistor 100 Kohm, 1/10W	RM73B--104J	
R937	247 0007 945	Chip Resistor 1 Kohm, 1/10W	RM73B--102J	
R938-941	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J	
R942	247 0007 945	Chip Resistor 1 Kohm, 1/10W	RM73B--102J	
R943	247 0008 928	Chip Resistor 2.2 Kohm, 1/10W	RM73B--222J	
R944	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J	
R946	247 0012 927	Chip Resistor 100 Kohm, 1/10W	RM73B--104J	
R947	247 0011 944	Chip Resistor 47 Kohm, 1/10W	RM73B--473J	
R948	247 0014 967	Chip Resistor 1 Mohm, 1/10W	RM73B--105J	
R949	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J	
R956	247 0009 985	Chip Resistor 10 Kohm, 1/10W	RM73B--103J	
VR201,202	211 0757 102	Variable Resistor 100 Kohm		2
VR203	211 0754 105	Variable Resistor 50 Kohm		1
VR204	211 0756 103	Variable Resistor 100 Kohm		1
VR205	211 0755 104	Variable Resistor 50 Kohm		1
VR206	211 6077 925	Semi Fixed Resistor 10 Kohm		
VR301	211 6077 925	Semi Fixed Resistor 10 Kohm		
VR401	211 6069 027	Semi Fixed Resistor 200 Kohm		
VR403	211 6077 925	Semi Fixed Resistor 10 Kohm		
VR404	211 6064 093	Semi Fixed Resistor 22 Kohm		
R951	246 2053 033	Resistor Array 4.7 Kohmx5	RK99--472JP5	1
R923	246 2052 022	Resistor Array 47 Kohmx4	RK99--473JP4	1
CAPACITORS GROUP				
C101,102	254 4260 045	Electrolytic 1μF/50V	CE04W1H010M	
C103,104	257 0008 983	Chip Ceramic 1000PF/50V	CK73B1H102K	
C105,106	254 4410 921	Electrolytic 10μF/50V	CE04W1H100M (KMG)	
C107-110	256 1034 089	Metalized 0.12μF/50V	CF93A1H124J	
C111	254 4409 903	Electrolytic 220μF/10V	CE04W1A221M (KMG)	
C112	254 4388 707	Electrolytic 2200μF/16V	CE04W1C222MC (KMF)	
C201-204	257 0010 942	Chip Ceramic 0.022μF/50V	CK73B1H223K	
C205,206	257 0009 924	Chip Ceramic 2200PF/50V	CK73B1H222K	
C207,208	257 0002 921	Chip Ceramic 10PF/50V	CC73SL1H100D	
C211,212	254 4258 002	Electrolytic 4.7μF/35V	CE04W1V4R7M	
C213,214	254 4305 081	Electrolytic 2.2μF/50V	CE04W1H2R2M	
C215	254 4252 008	Electrolytic 22μF/10V	CE04W1A220M (SRE)	
C216	254 4262 097	Electrolytic 22μF/100V	CE04W2A220M	
C217	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z	
C218	257 0005 960	Chip Ceramic 270PF/50V	CC73SL1H271J	
C219	257 1004 960	Chip Ceramic 100PF/50V	CC73SL1H101J	
C220	254 4252 037	Electrolytic 100μF/10V	CE04W1A101M	
C301	257 0012 966	Chip Ceramic 0.01μF/50V	CK73F1H103Z	
C302,303	257 0003 904	Chip Ceramic 22PF/50V	CC73SL1H220J	
C304,305	257 0009 966	Chip Ceramic 4700PF/50V	CK73B1H472K	
C306,307	257 0009 940	Chip Ceramic 3300PF/50V	CK73B1H332K	
C308	254 4260 058	Electrolytic 2.2μF/50V	CE04W1H2R2M	
C309	257 0013 907	Chip Ceramic 0.047μF/50V	CK73F1H473Z	
C310	257 0012 982	Chip Ceramic 0.022μF/50V	CK73F1H223Z	
C311	257 0009 966	Chip Ceramic 4700PF/50V	CK73B1H472K	

Ref. No.	Part No.	Part Name	Remarks
C312,313	257 0003 933	Chip Ceramic 30PF/50V	CC73SL1H300J
C314	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C315	254 4252 037	Electrolytic 100μF/10V	CK04W1A101M
C401	257 0013 907	Chip Ceramic 0.047μF/50V	CK73F1H473Z
C402~404	257 0012 966	Chip Ceramic 0.01μF/50V	CK73F1H103Z
C405	257 0012 982	Chip Ceramic 0.022μF/50V	CK73F1H223Z
C406,407	254 4260 045	Electrolytic 1μF/50V	CE04W1H010M
C408	257 0008 983	Chip Ceramic 1000PF/50V	CK73B1H102K
C409	257 0017 903	Chip Ceramic 12PF/50V (Temp.)	CC73RH1H120J
C410	254 4260 045	Electrolytic 1μF/50V	CE04W1H010M
C411	257 0008 983	Chip Ceramic 1000PF/50V	CK73B1H102K
C412	254 4254 006	Electrolytic 10μF/16V	CE04W1C100M
C413	257 0009 924	Chip Ceramic 2200PF/50V	CK73B1H222K
C414	254 4260 016	Electrolytic 0.22μF/50V	CE04W1HR22M
C415	254 4260 045	Electrolytic 1μF/50V	CE04W1H010M
C416	257 0010 900	Chip Ceramic 0.01μF/50V	CK73B1H103K
C417	254 4260 045	Electrolytic 1μF/50V	CE04W1H010M
C418	257 0003 933	Chip Ceramic 30PF/50V	CC73SL1H300J
C419	257 0008 983	Chip Ceramic 1000PF/50V	CK73B1H102K
C420	254 4260 016	Electrolytic 022μF/50V	CE04W1HR22M
C421	257 0010 900	Chip Ceramic 0.01μF/50V	CK73B1H103K
C422	254 4252 008	Electrolytic 22μF/10V	CE04W1A220M
C423	254 4252 024	Electrolytic 47μF/10V	CE04W1A470M
C424	257 0013 907	Chip Ceramic 0.047μF/50V	CK73F1H473Z
C425	257 0009 940	Chip Ceramic 3300PF/50V	CK73B1H332K
C426	257 1013 993	Chip Ceramic 0.1μF/25V	CK73B1E104K
C427,428	257 0009 982	Chip Ceramic 6800PF/50V	CK73B1H682K
C429	254 4258 002	Electrolytic 4.7μF/35V	CE04W1V4R7M
C430	257 0010 900	Chip Ceramic 0.01μF/50V	CK73B1H103K
C431~433	257 0010 942	Chip Ceramic 0.022μF/50V	CK73B1H223K
C434	257 1011 940	Chip Ceramic 0.022μF/50V	CK73B1H223K
C435,436	257 0008 983	Chip Ceramic 1000PF/50V	CK73B1H102K
C501	257 0010 900	Chip Ceramic 0.01μF/50V	CK73B1H103K
C502	257 1013 951	Chip Ceramic 0.047μF/25V	CK73FB1E473Z
C503	254 4252 901	Electrolytic 22μF/10V	CE04W1A220M
C504	257 0010 955	Chip Ceramic 0.027μF/50V	CK73B1H273K
C505	257 0009 924	Chip Ceramic 2200PF/50V	CK73B1H222K
C506	254 4252 024	Electrolytic 47μF/10V	CE04W1A470M
C507,508	257 0002 992	Chip Ceramic 20PF/50V	CC73SL1H200J
C509	257 0004 961	Chip Ceramic 100PF/50V	C73SL1H101J
C701,702	254 4260 058	Electrolytic 2.2μF/50V	CE04W1H2R2M
C703	254 4410 918	Electrolytic 2.2μF/50V	CE04W1H2R2M (KMG)
C704	254 4260 058	Electrolytic 2.2μF/50V	CE04W1H2R2M
C705~708	254 4258 002	Electrolytic 4.7μF/35V	CE04W1V4R7M
C711,712	254 4258 002	Electrolytic 4.7μF/35V	CE04W1V4R7M
C713	254 4250 013	Electrolytic 47μF/6.3V	CE04W0J470M
C714	254 4302 039	Electrolytic 22μF/10V	CE04W1A220M (SRE)
C715	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C716	254 4252 008	Electrolytic 22μF/10V	CE04W1A220M
C717	254 4423 905	Electrolytic 47μF/35V	CE04W1V470M (KMG)
C718	257 1013 993	Chip Ceramic 0.1μF/25V	CK73B1E104K
C719	254 4252 037	Electrolytic 100μF/10V	CE04W1A101M
C804	254 4254 048	Electrolytic 100μF/16V	CE04W1C101M
C805,806	254 4254 006	Electrolytic 10μF/16V	CE04W1C100M
C807	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C812	254 4260 045	Electrolytic 1μF/50V	CE04W1H010M
C814	254 4254 064	Electrolytic 330μF/16V	CE04W1C331M
C901	257 0014 935	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C902	257 0012 966	Chip Ceramic 0.01μF/50V	CK73F1H103Z
C903	254 4252 008	Electrolytic 22μF/10V	CE04W1A220M
C906	257 1016 916	Chip Ceramic 0.1μF/25V	CK73F1E104Z
C907	254 4252 037	Electrolytic 100μF/10V	CE04W1A101M

OTHER GROUP				Q'ty
	—	(P.W. Board)		(1)
L301	235 0060 950	Inductor 10μH		1
L401	235 0088 932	Chip Inductor 4.7μH		1
L801	232 0167 100	Choke Coil		1
S901~903	212 4388 910	Tact Switch		3
S904~906	212 4764 000	Tact Switch		3
S908	212 4388 910	Tact Switch		1
S910	212 4388 910	Tact Switch		1
S912~918	212 4388 910	Tact Switch		12
CF401,402	261 0120 006	FM C. Filter SFE10.7MS3GK-A		2
X301	399 0151 008	X'tal (4.332 MHz)		1
X302	399 0041 008	Ceramic Vibrator CSA 4.00MG		1
X401	261 0122 004	Ceramic Filter CSB 456F23		1
X501	399 0040 009	X'tal (7.2 MHz)		1
X901	399 0107 007	Ceramic Vibrator CST4.19MGW		1
PL901~905	393 0103 003	Lamp Ass'y		5
TN401	216 0088 009	FM/AM Tuner Pack		1
T401	231 2088 006	FM Det. Trans		1
	204 8408 002	2P Pin Jack		1
	204 8409 001	Ant. Jack		1
	204 8397 003	Jack (3.5SW)		1
CN39A	205 0746 008	39P FPC Conn. Base		1
CN7A	205 0535 086	7P Conn. Base		1
CN7A	205 0536 085	7P Conn. Socket		1
CN3A	205 0343 032	3P Conn. Base (KP-PH)		1
CN3B	205 0535 044	3P Conn. Base (KP-PH)		1
CN3B	205 0536 043	3P Conn. Socket		1
CN12A	205 0375 026	12P Conn. Base (KP-PH)		1
CN14A	204 8215 004	13P DIN Jack		1
CN2A	205 0343 029	2P Conn. Base (KR-PH)		1
	205 0536 043	3P Conn. Socket		4
CN6A,6B	205 0535 031	6P Conn. Base		2
CN6A,6B	205 0536 030	6P Conn. Socket		2
CN8A	205 0750 081	8P Conn. Base (5569)		1
	415 0663 005	Spacer	Put on Tuner Pack	1
CN3A	203 4585 023	3P KR-DS CON CORD		1
CN4A	203 6223 011	4P SAN -SAN CON CORD		1
CN7B	204 2530 002	7P DA-DA CON-CORD		1
CN12A	204 6324 010	12P KR-DS CON-CORD		1